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THESE Figures illustrative of my ELEMENTS OF GENERAL ANATOMY I have, with a few exceptions, drawn from Nature with my own hand. I do not pretend that they have won anything as works of art from this ; but I had no choice ; and I believe them to be faithful. Their great defect, in my own eyes, is a want of the natural delicacy which the structures represented possess,—a delicacy, indeed, which no human hand can hope to emulate. However ready to acknowledge their want of artistic merit, then, I can nevertheless say that they are the product of many an hour that would else have been an hour of relaxation.

A few repetitions, in consequence mainly of the introduction of the Table of TERMINOLOGY, will have to be pardoned. I thought it well to present a general and comprehensive view of the elementary forms of the component parts of animals, to show their affinities, and to trace the passage, by gradual evolution, into more highly organized forms, and finally, the essence of their complete metamorphosis first, and then of their degeneration till they are felt

I take the present opportunity of publicly expressing my thanks for the readiness with which the friends I have mentioned favoured me with the use of their costly instruments; my more particular acknowledgments, however, are due to my honoured colleague Valentin; ever ready to oblige, ever actively engaged himself, and ever glad to aid research in all within the sphere of his influence—may he long continue to adorn the school upon which he now sheds so bright a lustre!

FR. GERBER.

BERN, 1840.

GENERAL ANATOMY.

SKETCH

OF A

SYSTEMATIC TERMINOLOGY IN REFERENCE TO GENERAL ANATOMY;

OR,

AN ATTEMPT TO DESIGNATE APPROPRIATELY, AND TO DIVIDE SYSTEMATICALLY, THE ELEMENTARY CONSTITUENTS OF ANIMALS, INCLUDING A PARTICULAR EXPLANATION OF THE FIGURES FROM FIG. 164 TO 238.

I. UNORGANIZED CONSTITUENTS, THE FORMS OF WHICH DEPEND ON GENERAL PHYSICAL AND CHEMICAL FORCES.

1. *Liquid with the globular form.*

GUTTULA, a drop, a globule. Figs. 164—168; the objects seen by transmitted light.

Fig. 164. A flattened round drop, adhering to the port-object, in this instance a plate of glass.

— 165. An elliptical-shaped drop, under the same circumstances.

— 166. A free globular drop, its lowest point in the focus of the microscope.

— 167. A similar drop, its centre in the focus.

— 168. A similar drop, its highest point in the focus.

— 169. A drop of the same description seen by reflected light falling laterally.

Example.—Horny plates of the horn of the ox. Fig. 34.

Scales from the conjunctiva (horse.) Fig. 41 a.

b b. Larger, with various, not predominating linear boundaries.

LAMINULÆ. Fig. 183.

Example.—Large cells without nuclei.

c c. Long, linear.

FILA TÆNIOFORMIA S. TÆNIOLÆ. *a.* Simple band-like or flat fibre. Fig. 184.

Example. The flattened fibre, of elastic tissue. Figs. 54—56.

The involving, spiral fibre of the primary voluntary muscular fasciculus in the dog. Fig. 29, 2 b, 3 b, 4 c.

b. Compound flat fibrous formations, made up of several flat fibres.

FIBRA SQUAMOSA, squamous fibre. *Fibra tæniolaris,* flat fibre. Allineated squamæ, or squamæ hanging together in a line. Fig. 185.

Example.—Fibrous horn. Fig. 34 B.

FUNICULUS TÆNIOLARIS. Flat filamentous cord;—parallel flat filaments bound together.

Example.—Fig. 79, 3 b.

FUNICULUS FIBRO-SQUAMOSUS. Fibro-squamous cord: parallel squamous fibres bound together.

Example.—Fig. 34 B.

MEMBRANA S. CUTICULA SQUAMEA SIMPLEX. Simple or unilamellar membrane,—squamæ arranged superficially. Fig. 186.

Example.—Fig. 41 b.

MEMBRANA SQUAMOSA COMPOSITA. Compound or multilamellar membrane,—superficially arranged squamæ, one layer lying over another.

Example.—Fig. 41, c, and 40 e, f.
The flat filamentous bundle.
The flat fibrous bundle.
The flat filamentous membrane.
The flat fibrous tissue, and so on, vide fig. 194 to 201.

B. Rounded homogeneous soft solids.

a. Simple, peripheral.

GRANULA, granules; aggregated granules. Small, soft, rounded, simple formations. Fig. 187—192.

Examples.—Lymph granules. Fig. 7 b, fig. 23 B, b. Granules of the cyst-corpuscle (multigranular pus-corpuscle.) Fig. 9 c.

Attached granules. Fig. 10 upon c, d, and l.
Fibrinous granules. Fig. 23 A.
Granules of coagulated milk. Fig. 23 A.
Mucus-granules. Fig. 25 A, d and B. fig. 48 D.
Seminal granules. Fig. 26 A.
Pigmentary granules. Fig. 32, 1. and fig. 39 d.
Ganglionic granules (ganglionic cells.) Fig. 89. 2, 3, 4. fig. 89, 1 and 7.
Granules of the granular muscles of organic life (?) Fig. 74.
Granules of the fibres of the muscles of animal life (?) Fig. 82.

GLOBULI, globules. Smooth, spherical granules. Fig. 188.

Example.—Seminal globules. Fig. 26 A.

b. Compound, consisting of many granules stuck together. Fig. 189—192.

CORPUSCULA GRANULOSA S. GRANULATA, granular or granulated corpuscles. Aggregation corpuscles; rounded corpuscles having no nucleus, made up of granules. Fig. 190.

Examples.—Cyst-corpuscle (multigranular pus-corpuscle.) Fig. 9 c, fig. 10 e, f, l.
Mucus-corpuscle. Fig. 25 B.

Example.—Tissue of cellular substance. Fig. 49 B.
Tissue of contractile filaments. Fig. 75, at b. and c.

RETE FILORUM. A filamentous net. Fig. 198, fig. 225 (?)

Example.—Elastic tissue (?) Fig. 54 a.

FILORUM IMPLICATIO REGULARIS. A grating of filaments. Fig. 199.

Example.—Fig. 76 A (?)

CONTEXTUS FASCICULOSO-FILOSUS. A tissue of filamentous fasciculi. Fig. 201.

2. More highly organized proximate or compound constituent parts, in which dissimilar structures are distinguishable.

A. Binary. Composed of two simple elements.

a. Uniform structureless substances, forming simple investing covers.

α. Rounded.

VESICULA S. BULLULA SIMPLEX S. PRIMITIVA. A simple vesicle. An unnucleated cell. A simple hollow globule, or globular cuticle including structureless substances, fig. 208; heaped together, fig. 209. Including serum:

The serous vesicle, which occurs every where in the moist cellular substance.

Including fat:

The fat vesicle; occurs universally in the adipose cellular substance.

Example.—Round fat vesicles. Fig. 31 a, b, c.
Crowded (multilocular) fat vesicle. Fig. 71 and 72 b, and fig 94 s.

α. β. Transition of the simple vesicle into the simple hollow fibre (simple vessel.)

VESICULA PEDUNCULATA SIMPLEX. Pedunculated simple vesicle. Fig. 208.

Example.—The vesicle of the epithelial corpuscle (?) for example, of the intestinal villus. Fig. 240 c, d, and fig. 241 b.

Vesicle of the sebaceous glands. Fig. 42 n, o, p, fig. 43 e, fig. 44 e, fig. 45 e.

Vesicle of the sudoriparous glands. Fig. 43 i, i.

Vesicle of the Meibomian glands. Fig. 158 c.

β Elongated, siliquose, simple, hollow envelope, with uniform contents.

VASA SIMPLICIA. Simple vessels with homogeneous contents. Fig. 213.

Example. The most delicate peripheral or efferent lymphatic vessels. Fig. 108; a, a, in fig. 113; fig. 141.

The excretory ducts of the cutaneous glands: viz.

Of the sebaceous glands. Fig. 36 e, f, fig. 37 a, a, fig. 40 g, h, fig. 42 d, d, fig. 43 f f, fig. 44 c, fig. 45 d, c, fig. 160, fig. 161, fig. 239 d, e, f.

Of the sudoriparous glands. Fig. 43 k, k.

The sheaths of the hairs. Fig. 42 c, fig. 43 and 45 c.

The tubuli of the ivory in the teeth. Fig. 68 f, i, k, l.

Horny tubes, with simple solid contents:

Pili, hairs. Fig. 42 k, l, m, fig. 43 h. fig. 45 f, fig. 94 r.

Soft moveable hairs:

CILIA VIBRATORIA. Vibratile cilia.

Of the ciliary cells. Fig. 221 d, fig. 222 c.

Of the ciliary corpuscles. Fig. 48 d.

Of the ciliary cellular fibres. Fig. 223 at a, and fig. 224 at b.

b. Organized simple formations; simple, including envelopes:

α. Rounded.

NUCLEUS NUCLEOLATUS. Nucleolated nucleus. (Schachtelkern, G.) A nucleus with an included nucleolus. Figs. 204—206.

Example.—Blood corpuscles. Fig. 1—6, fig. 10, a, b.

Lymph-corpuscles. Fig. 7, fig. 4 a.

Exudation corpuscles. Fig. 9 a, fig. 10 i, k.

Ichor corpuscles. Fig. 9 d, fig. 10 c, d.

CELLULÆ NUCLEATÆ. Nucleated cells. (Kernzellen, G.) Simple cells without nucleoli. Figs. 214, 216, 227.

(Eichen, Eibläschen, G.) Fig. 27. Made up of the double envelope or covering. *c.* The vitelline membrane, and *d*, the exochorion or zona pellucida, which include *e*, the vitellus or yolk, and *f*, the germinal vesicle.

a b. Transition from the rounded to the elongated form.

VESICULÆ PEDUNCULATÆ COMPOSITÆ. Pedunculated, compound vesicles.

Example.—The pulmonary vesicle or vesicles. Fig. 159 (Cover:—the mucous membrane, and cellular epithelium; Contents—a muco-aqueous fluid and air.)

b. Elongated.

VASA COMPOSITA. Compound vessels. Vessels having two tunics, and contents of two different descriptions.

Example.—The central or efferent lymphatic vessels. Fig. 108 b, e, f.

The venous lymph-ducts. Fig. 110 a, 111 b, e, 112 b, c.

The interglandular lymphatics. Fig. 109 a.

(Cover:—A muscular fibrous tunic, and a serous tunic; Contents—Lymph-corpuscles and lymph-fluids.)

The bloodvessels:

The veins. Fig. 14—120, fig. 136 d. (Cover:—An organic, muscular, fibrous coat, and a serous coat; Contents—Blood-corpuscles and blood-fluid or liquor sanguinis.)

The arteries. (Cover:—An elastic tissue, or coat, and a serous coat.) Contents—Same as the veins.)

The excretory ducts of such glands as the
Salivary glands,
The liver,
The testes,
The lachrymal glands,
The mammary glands, &c. which are lined throughout with a mucous membrane, and of which the cover or bounding parietes consist of this membrane with a supercomposed cellular epithelium, and the contents are mucous corpuscles and granules, oil-globules, or watery fluid, &c.

EXPLANATIONS

OF THE

PLATES.

Fig. 1—21. Blood.

— 1—14. Blood-corpuscles, globules or discs.

— 1—6. Blood corpuscles of vertebrate animals.

— 1. Blood corpuscles of the fish, (the barbel, *Cyprinus barba.*)

a. The capsule (nucleus); *b.* the nucleus (nucleolus.)

Fig. 2. Blood-corpuscles of the reptile (newt or triton) magnified 450 diameters.

Fig. 3. Blood-corpuscle of the bird (pigeon) magnified 450 diameters.

Fig. 4. Blood corpuscle of the mammal (horse) magnified 450 diameters.

a. A lymph globule; *b.* two blood-corpuscles standing on their edges.

Fig. 5. Blood corpuscle of man, magnified 530 diameters.

— 6. Blood corpuscles of the newt in the capillary vessels, magnified 35 diameters.

a. Final subdivisions of the arteries; *b b b.* Capillaries with single rows of blood-corpuscles; *c.* Passage into the first divisions of the veins. The arrows indicate the course of the blood in the capillaries.

Fig. 16. Plan figure; progress of organization in the fibrine composing coagulable lymph, (exudation of the liquor sanguinis without admixture of blood-globules,) deposited on serous and synovial membranes, &c.

a. Fluid fibrine in the form of drops. *b.* A piece of consolidated but still amorphous fibrine.

c. Exudation corpuscles (fig. 9 *a.*) not sufficiently magnified to bring the nuclei into view—*first stage of the organization.* *d.* Associated cell-bundles, more highly magnified than in fig. 102 *c d,* 103 *d d,* and figs. 218 and 219—*first stage of the fibrillation.* *e.* Associated cylindrical fasciculi—*second stage of fibrillation.* *f.* Divided or disgregated cylindrical fasciculi as they appear in the fibrils of cellular membrane, of sinews, &c.—*complete fibrillate organization.*

Fig. 17. Secondary organization in coagulable lymph. Loops and lancet-shaped leaflets—exudation villi formed of aggregated cell-fasciculi (as in fig. 102 *c.*) The liquor sanguinis (coagulable lymph) has exuded upon a portion of inflamed peritoneum. The organization has here passed the first and has reached the second stage, or the commencement of fibrillation. A specimen of secondary organization in false membranes. From a mammal (the horse.)

Fig. 18. Second stage of fibrillation in a mass of exudation from the peritoneum—aggregated cylindrical fibrillation.

Fig. 19. Secondary round fibrils (fibril of cellular membrane, and transformation of this into the fibril of sinew.)

a. Bundles and strings of the fibrils of cellular membrane.

b. Strings of the fibrils and single fibrils of sinew.

Fig. 20. Secondary formation of bloodvessels in villi of coagulable lymph.

Fig. 21. A portion of another leaf-like villus of exudation, with the bloodvessels more highly magnified.

a. Artery running into the middle of the mass.

b. Vein lying near it.

Fig. 29, 30. Crystalline deposits in various fluids.

Fig. 29 A. Yellowish-gray precipitate—gravel from the bladder of a male ass.

a. A globule split by pressure into three pieces.

B. Globular precipitate—gravel from the pelvis of the kidney of the horse? (Pferdewallachen, G.) The globules are smaller and fewer in number.

a. An agglomerated heap of deposit.

Fig. 30 A. Crystals of sulphate of lime in fibrine after exudation of coagulable lymph into the thoracic cavity of the horse.

a a. A linear rank of these crystals. Magnified 120 diameters.

b. Various clusters of the same crystals. Magnified 400 diameters.

B. Crystals from the fluid of the allantois of the horse.

Fig. 31. Fat of the horse. Magnified 50 diameters.

a. Fat vesicle from the pappy layer of fat within the spinal canal.

b. Fat vesicle from the cavity of the orbit.

c. Vesicle with transparent oily fat—elain vesicle.

d. Crystalline fat—tallow, stearine; and

e. Globular drop of viscid brown elain, both from the prepuce of a horse? (Pferdewallachen, G.)

Fig. 32 and 33. Black pigmentary matter.

— 32, 1. Pigmentary corpuscles and pigmentary granules.

a. A pigmentary corpuscle entire.

b. A pigmentary body, resolved into its constituent parts.

c. Pigmentary granules.

2, 3. Pigmentary cells of the choriod coat, of the ox's eye.

2, *a.* Meshes of the intercellular rete, after the removal of the pigmentary cells, under a power of 170.

3. A single pigmentary cell—a nucleated pigmentary corpuscle, magnified about 400 diameters.

a. The lamellation of the layers, which cover one another like steps.

b. The clear nucleus of the cell.

4. Different other forms of the pigmentum nigrum.

a. Elongated.
b. Radiated.
c. Asteroid.
d. Reticulated.
} Pigmentum nigrum.

Fig. 33. A portion of the tunica choroidea or vascular tunic of the ox's eye, magnified 56 times.

a a a. Veins of this tunic, covered by a single layer of pigmentary cells.

b. Arborizations of the veins in the neighbourhood of the ciliary ligament, covered with pointed and reticulated pigment.

c. Thick pigment in the vascular meshes.

Fig. 34—45. Horny tissue.

— 34 Elementary parts of horn. Slice of the horn of the ox, of the greatest possible delicacy. Magnified 400 diameters. (With this compare the horn of the fœtal ox, in the cells of which nuclei and nucleoli are still apparent, fig. 226.)

A. Elementary plates or lamellæ of the transparent, colourless, hyaline horn.—Cells transformed to horn, the nuclei of which have disappeared.

B. Plates arranged in rows or bundles,—fibrous horny tissue.

Fig. 35. A thin layer, cut parallel with the axis from the tip of the horn of an ox. Magnified 100 diameters.

a a. Clear hyaline horn.

b b. Deep brown pigmentary spots, which occur in the coloured parts of streaked horn.

c. Vascular canal, in the middle of the tip of the horn.

Fig. 36—39. Horny tissue of the horse's hoof.

— 36. A perpendicular slice from the upper part of the posterior wall of the hoof. Magnified 15 diameters.

a. A part of the crown edge (Krohnrinne, G.) of the hoof.

h. Root of the hair.

i. Its cavity filled with vessels, nerves, and cellular substance.

k l m. The hairs, prolongations of the roots.

n n. The mulberry-like sebaceous glands.

o. Union of the pediculated vesicles of the gland to form the excretory duct.

p. External surface of the vesicles.

Fig. 43. Sebaceous and sudoriparous glands (prepuce of the stallion) magnified about 12 diameters.

a a. Epidermis.

b. Infundibuliform depression of the same.

c c. Sheaths of hairs.

d d. Pulps of hairs in their sheaths.

e e. Sebaceous glands.

f f. Their excretory ducts.

g. Root of hair.

h. Delicate hair.

i. Sudoriparous glands.

k. Their excretory ducts.

Fig. 44. Section of the integument of the scrotum, magnified 8 diameters (horse.)

a a. The globular cutaneous papillæ, covered with the dark coloured cuticle.

b b. Infundibuliform inversion of the cuticle.

c. Excretory duct of a sebaceous gland.

d. The particular ducts of the several glomeruli composing the gland.

e. The sebaceous gland, filled with brown coloured secretion.

Fig. 45. Section of the labium, magnified about 8 times (mare.)

a. The papillæ covered with cuticle.

b. The infundibuliform inversion of the cuticle.

c. The excretory ducts of the sebaceous glands.

d. The secondary divisions of these.

e. The appendices or vesicles of the sebaceous glands, filled with sebaceous matter.

f. Fine hairs.

Fig. 46—48. Epithelial corpuscles and ciliary corpuscles.

— 46. Section of the mucous membrane of the trachea, magnified 100 diameters (horse.)

a b c. The ciliary epithelium.

a. The ciliary corpuscles.

b. Ciliæ attached to the crown of the same.

c. Thick superficies of the mucous membrane, formed of elastic membrane, upon which the ciliary corpuscles, and ciliary cellular fibrils, are implanted by means of their pedicles.

d. Single detached ciliary epithelial corpuscles magnified 125 times. Among these are to be distinguished cylinder or roller-shaped ciliary corpuscles, bell-shaped corpuscles, cup-shaped corpuscles, and bicellular corpuscles, the latter with pedicles at either extremity.

Fig. 47. Villi of the conjunctiva, from the inner aspect of the upper eye-lid (horse.)

a a. Two villi.

b b. Spaces betwixt these.

c. The cells of the cellular epithelium, or the coronary edges of the epithelial corpuscles.

d. The nuclei of the corpuscles.

Fig 48. Ciliary corpuscles and their constituent parts.

A. A bell-shaped ciliary corpuscle seen from the side, and magnified about 400 diameters.

a. The ciliary crown.

b. The ciliary papilla.

c. The coronal pit.

d. The ciliæ.

e. The coronal globule (coronal nucleus.)

f. The body.

g. The nucleus.

h. The pedicle by which the corpuscle is attached to the mucous membrane.

B. A ciliary corpuscle viewed from the coronal aspect.

a a. The ciliary corona.

b. Papillæ.

completely surrounded by a distinct area; as yet, however, there is no deposition of earthy matter apparent.

Fig. 59. Reticular cartilage from the arched portion of the concha of the ear, magnified 300 diameters (horse.)

a. The fibres of the intercellular net-work, corresponding to elastic tissue, and also of similar origin.

b. Cartilage cells—cartilage-corpuscles.

Fig. 60. Costal cartilage, the ossification begun, from the neighbourhood of the transverse slice represented in fig. 58, magnified 160 diameters.

1, 1. The reticular cells formed by the bony matter just deposited.

a. The osseous cartilage (hyaline substance.)

b. Osseous corpuscles (nuclei of the bone-cells.)

c. Fat-vesicles occupying the place of the cartilaginous substance which has been removed.

Fig. 61—70. Elementary parts of bone.

— 61 A perpendicular section from the middle of the femur, magnified 12 diameters (horse, 4 years old.)

a. Ossific cartilage, with scattered bone-corpuscles.

b. Canals—medullary, or for vessels.

c. Anastomoses, or communications of these with one another.

Fig. 62. A portion of the same section magnified 50 diameters.

a. Ossific cartilage, with included bone-corpuscles.

b. Medullary canals.

c. Transverse communicating branches of these.

Fig. 63. Transverse section from the humerus, magnified 15 diameters (young horse.)

a a a. Vascular canals running parallel with the medullary cavity.

b b. Perpendicular medullary canaliculi, transversely divided.

c. Anastomotic vessels betwixt the perpendicular and transverse vessels of the bone in medullary canals.

Fig. 64. A portion of the same section magnified 50 diameters.

a. Perpendicular canaliculi.

b. Transverse canaliculi.

c c. Branches of communication between them.

Fig. 65. A very small portion of the same section magnified 100 diameters.

a. Transversely arranged rank of osseous corpuscles.

b. to *c.* Osseous corpuscles arranged concentrically to the transversely divided medullary canaliculus *c.*

d. Transverse canaliculus.

Fig. 66. Section of the outer table of the human skull, magnified 15 diameters. The medullary canaliculi form a rete.

Fig. 67. Transverse section of the rubbing surface of a grinder from the upper jaw of the full-grown horse, magnified one-third.

a' a'. Bony substance of the outer aspect of the tooth.

a. The inner portion of the bony substance—cortical substance.

b. Vitreous substance, or enamel.

c. Ivory or substance of the tooth.

d. Brown middle streak of pigment.

e. Inner layer of the vitreous substance.

f. Inner layer of the bony substance.

g. Deep brown depression, not yet filled up by the inner bony substance.

Fig. 68. The portion of the tooth inclosed by the oblong *h.* in fig. 67 magnified 36 diameters.

a b. External bony or cortical substance.

a. External margin of the tooth.

b. Connection of the external bony substance, with the enamel. The surface of the bony substance which is united with the enamel is covered with hemispherical points (*b' b'*) which are sunk amidst the enamel and inclose bony corpuscles; these are the bony cells with their nuclei which penetrate the enamel.

b'. Connection of the internal bony substance with the internal enamel.

c. Filaments of cellular tissue.

Fig. 74—86. Elementary parts of muscles.

— 74. Granular muscle of the *organic* life, from the muscular tunic of the uterus, magnified 80 diameters (cow.)

A. A primary bundle.

B. A bundle resolved into its several elements by means of alternately spirting water upon it, and gentle pressure between two plates of glass.

a. The filaments which serve as the basis of the tissue (filaments of cellular tissue and vessels.)

b. The attached muscular granules, in uninjured bundles, arranged in rows like strings of beads.

Fig. 75. Filamentous muscle of the *organic* life.

A. Primary bundles and ropes of filamentous organic muscle, magnified 80 diameters (longitudinal fibres of the colon, horse.)

a a a. Bundles.

b. A rope or string of muscular fibres teased out.

B. A bundle of sinuous primary fibres teased out.

C. Puckered or crisped primary muscular fibres.

D. A grating of rigid muscle of the *animal* life, (*a*. from the lingualis, *b*. from the myloglossus,) after the action of oil of turpentine. In these bundles neither transverse streaking nor longitudinal fibrillation is distinguishable.

Fig. 76 A. A grating of organic primary muscular filaments. A very thin slice from the muscular tunic of a piece of small intestine that had lain for a short time in brine (sheep.)

a. Longitudinal layer.

b. Transverse layer.

B. Two organic primary muscular bundles, intermediate betwixt the granular and filamentous structure, or compounded of the two (from one of the longitudinal muscular bands of the colon, horse.)

Fig. 77—86. Elements of the muscles of voluntary motion, or of the *animal* life.

Fig. 77. Simple layer of a primary bundle of a muscle of voluntary motion (long head of the *triceps brachialis*, horse.)

Fig. 78. A primary muscular bundle, magnified 200 diameters (same animal.)

a. Primary bundle with wrinkled boundary line and complete striæ.

b. Primary bundle with the sheath removed in parts, or in which the granules of the primary filaments in some places only appear transversely arranged in rows near to one another: in other places they appear co-ordinated lengthwise, rather than transversely, so that in these the bundles seem to be streaked longitudinally.

c. Primary bundle with the sheath torn longitudinally, or with an interruption of the transverse striæ in the direction of the long axis.

Fig. 79. Primary bundle of a muscle of voluntary motion, magnified 200 diameters.

1. Bundle which has been stripped off from a larger mass of muscle.

a. Transverse striæ, or transversely streaked sheath.

b. Sharp torn edge of the same.

c. Primary filaments, presenting the appearance of a series of adhering hemispheres.

2, 3, 4. Primary bundles of a voluntary muscle as I have occasionally observed them when they were examined in the recent state.

2, *a.* Primary fibres.

b b b. Spiral sheath of flat filaments.

3, *a.* Primary fibres.

b. The spirally convoluted flat filaments, united five or six together, form broader spiral bands.

4, *a.* Primary fibres, which at

b. Are lacerated.

c. Spiral sheath composed of several flat filaments connected together.

d. Lacerated spiral filaments.

a a. Fasciculi of the myloglossus muscle, which terminate in cones under the mucous membrane of the tongue.

b b. Fasciculi of the lingualis cut transversely across, as they threaded the primary fasciculi of the myloglossus nearly at right angles.

Fig. 87. Pediculated vorticellæ * very highly magnified.

A. B. C. D. Four vorticellæ in different conditions, each being assumed voluntarily.

A. With the pedicle fully stretched out, and the cup or bell open.

a. The bell-shaped body, through which shines the polycystic stomach.

b. The crown.

c. The ciliæ.

1. A very delicate muscular fibre, wound around the erectile vessel, and in the relaxed state.

2. The erectile vessel distended with fluid from the body, by which the pedicle is extended.

B. A vorticella moving hither and thither, the pedicle slightly sinuous.

3, 3. The granules in the water thrown into circular motion or whirlpools by the action of the ciliæ of the animals.

C. A vorticella closed, and the pedicle spirally retracted by the action of the muscle, which, in the opposite state of the pedicle, is wound about the erectile vessel. Here the vessel (2.) appears everywhere external; the muscle (1.) again is internal. The ciliæ are concealed within the closed cavity of the body.

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* These figures are introduced here : 1st. From the singular resemblance which vorticellæ bear to the ciliary corpuscles (vide fig. 48 ;) 2nd, Because infusory animalcules are encountered in the living bodies of animals, particularly in morbid deposits; 3rd, Because their pedicle is composed according to my observations of the simplest muscular tissue and erectile vessel.

D. A vorticella which, after having been closed, is expanding the body and erecting the pedicle. *

a. The body now of a globular form.

b. The half expanded crown.

1. The muscle.

2. The erectile vessel.

E. An agglomeration of granules to which the pedicles are attached.

Fig. 88—90. Constituent elements of nerves.

— 88. 1, 2. Two primary fibrils of a spinal nerve examined in the body of an animal just dead.

a. The investing membrane pinched in at intervals. In the living animal the fibrils are perfectly cylindrical.

b. The still transparent fluid contents.

3. A nervous fibril examined some short time after the death of the animal, immediately before the consolidation of the contents. The fibril is more irregularly sinuous.

4. A primary nervous fibril more highly magnified.

a. Nervous tunic (nervous tubulus.)

a'. Presumed ciliary epithelium.

b. The cone-shaped ciliæ.

5. The ciliæ more highly magnified.

6. Highly magnified primary nervous fibril.

a. Tubulus.

b. The consolidated contents.

7. A delicate nervous fasciculus in its sheath.

a. The sinuously disposed fasciculus.

b. The cylindrical sheath.

8. A nervous fasciculus, the sheath of which exhibits sinuosities also.

a. The fasciculus.

b. The sheath.

9. A delicate nervous cord highly magnified, consisting of four primary fibrils; the particular sheaths of the several fibrils are conspicuous.

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* In this process the body of course makes as many revolutions upon its axis as the muscle of the pedicle is twisted times around the erectile vessel.

company with it, runs isolatedly at *k*, then joins two primary fibrils of the right hand cord at *l*, is associated at *m* with one of these only, separating from which, it finally forms the terminal loop *n*, and is re-associated with the middle cord *b*'.

Fig. 92—101. Peripheral relations and mode of distribution of the nerves of sensation.

Fig. 92. A thin perpendicular slice from the integument of the lip, dried and steeped in oil of turpentine (hog.)

a a a. Fine cords and fasciculi of the labial branches of the nervus trigeminus.

b b b. Simple nervous fibrils, which, without forming proper loops, pass from one fasciculus to another.

c c c. Terminal loops within the substance of the dermis.

d d d. Terminal loops reaching near to the surface.

e. Tactile convoluted terminal loops, forming the papillæ or papillary bodies of the skin.

f. A larger tactile papilla formed of the convoluted terminal loops of several cords.

g g. The external surface of the dermis in contact with the epidermis.

Fig. 93. The tactile nerves of the extremity of the human thumb.

a a a. Three terminal cords of the nervus volaris pollicis of the median nerve.

b b. Simple primary fibrils in the terminal plexus within the skin.

c c c. Simple bows or knots of terminal loopings between the papillæ.

d d d. Three papillæ, the nervous fibrils entering into their constitution convoluted and in the fashion of rosettes.*

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* In injected preparations the arteries present very nearly the same appearance, so that I have often found it requisite to look narrowly with a view to distinguish whether I had nerves or arteries before me.

Fig. 94. Section of a portion of the integument of the neck (hog.)

a a. Outer surface of the skin, darkened by a fine pigmentary deposit.

b. Depression where a bristle issues, and the ducts of sebaceous and sudoriparous glands terminate.

c c c c. Cutaneous nervous cords.

e e. Nerves of the secreting pulps of bristles.

d d. Loops of nervous fasciculi.

e. Terminal plexus under the cuticle.

f. A cord resolved into fibrils (perhaps a peripheral ganglion, of which many are encountered in the skin*) vide fig. 90.

g g g. Anastomotic fibrils—fibrils passing from one fasciculus to another.

h h. Terminal loops that surround the bristles.

i. Duct of a sebaceous gland.

k. Expansion in the course of the same where a secreting crypt has been cut away.

l. Union of the sebaceous follicle with the sheath of the bristle.

m. Sebaceous follicle,—simple sebaceous crypt.

n. Duct of a sudoriparous gland.

o o. Portions of the secreting follicles of two bristles.

p. Cavities of the same.

q q. Sections of the roots of the two bristles.

r. Bristle.

s. Fat in the nidus of the bristles.

Fig. 95. Peripheral plexiform distribution of the nerves in a portion of the skin of the neck, seen from the outer or epidermic aspect (hog.)

a a a. Nervous twigs and terminal fasciculi, which traverse the skin slantingly and form the terminal plexus.

b b b. Meshes of the terminal plexuses.

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* I must say, however, that I have never seen ganglionic globules in these plexuses.

nerve very highly magnified (mouse.) (Valentin, op. cit. fig. 44.

a b. Anterior and posterior cord of the sympathetic nerve, which connect the first and the third dorsal ganglia with this the middle one.

c c c c. Delicate cordlets which pass either to the viscera or to join the second dorsal nerve.

d. Ganglionic globules or cells.

e. Nervous fibrils coursing round the ganglion.

Fig. 108—113. Lymphatic vessels.

— 108. Lymphatic vessels and lymphatic glands from the spermatic cord of the horse, magnified 8 diameters.

A. A. The lymphatic glands.

a a a. Peripheral, efferent larger lymphatic vessels.

b b. An efferent or central lymphatic vessel.

c c'. Superficial network of delicate lymphatics, which serves in part to connect the small flat gland *d* with the efferent vessel *b.*

d. A very small, loose, semiglandular plexus of lymphatic vessels.

e. Extensive lymphatic network, formed of the vessels of the gland and the parts immediately adjacent.

f. Larger lymphatic vessels passing over and near to the gland, the numerous valves of which are obvious.

g. Delicate efferent lymphatics.

Fig. 109. The inferior cervical lymphatic gland of the horse, of the natural size.

a. The inferior portion of the connecting vessel of the cervical gland—the *tracheal canal* of Gurlt.

b. Larger trilobular } cervical gland, the vessels of
c. Smaller inferior } which are imperfectly injected.

Fig. 110—112. Transit of lymphatics into veins, magnified 1 diameter.

Fig. 110. Termination of a large lymphatic vessel in a vein from the iliac mesentery of the horse.

a. The lymphatic vessel, which was proceeding back towards the intestine from a mesenteric gland (an anastomotic vessel between the lymphatic and proper venous systems.)

b. Two semilunar valves at the point of communication, extremely like the ileo-cœcal valve of the human subject in structure.

c. A mesenteric vein.

Fig. 111. A piece of a mesenteric vein laid open, in which lymphatics are ending (to save space, two of these are represented close together.)

a. Mesenteric vein.

b. Lymphatic vessel.

c. The common cavity of the two semilunar valves represented as shut or in contact.

d. The free edges of the valves.

e. End of the lymphatic within the vein.

f g h. Opening of a lymphatic within a vein, the valves open.

f. The valvular pit or depression—the space between the valves and parietes of the vessel.

g. The free edge of one of the valves.

h. The cavity of the lymphatic vessel.*

Fig. 112. A more complete valve between a lymphatic and a vein (after A. Meckel, in Meckel's Archiv. 1828.)

a. A piece of a mesenteric vein of the horse seen from within.

b. A lymphatic vessel approaching the vein *a.*

c. The continuation of the lymphatic within the vein, by which a peculiar valve is formed, a structure, however, which is also encountered between vein and vein (vide fig. 114 and 116.)

d d. Two opposed semilunar valves, lying in contact with the parietes of the vein.

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* The valve that guards the orifice of the thoracic duct where it enters the axillary vein is precisely of the kind here figured. So is the ilio-cœlic valve of the human intestine, and the valves of the veins in general (vide figs. 116 and 117.)

form transversely convoluted masses, which are not unlike the convolutions of the small intestines, or of the brain.

Fig. 120. Erectile venous mass from the human spleen, magnified one-half. The preparation made by corrosion.

a. A vein.

b. Rounded vesicular venous cavities.

c. Pyriform and apparently blind vesicles forming the beginning of the vein. Many branches and pedicles of vesicles are broken off.

Fig. 121—152. Structure of arteries.

— 121. A wax model of the three semilunar valves at the root of the aorta—reduced one-third in size (colt.)

a. Aorta beyond the valves.

b b b. Sides of the aorta vaulted outwards in the situation of the three valves.

c. Notch where the valve is attached to the aorta.

d. Imprint of the sacculus of the valve.

f. Sulcus where the free edges of the two neighbouring valves come into contact when they are closed.

e. Situation or impression of the three corpora Arantii, lying in the axis of the aorta, the valves being closed.

Fig. 122—135. Peripheral or terminal arborizations of the arteries.

Fig. 122. Bifurcate or dichotomous terminal subdivision of an arterial twig, where the last divisions of the proper arteries pass into the capillary arches, or retia, and the incipient branches of the veins.

Fig. 123. Polychotomous or pecteniform terminal subdivisions of an arterial twig.

Fig. 124. and 125. Penicillate terminal sub-divisions of arterial twigs.

Fig. 126. Pomoid or globular terminal sub-division.

— 127. Asteroid terminal sub-division.

— 128. Capituloid terminal sub-division.

— 129. Penniform terminal sub-division.

— 130. Palmiform terminal sub-division.

Fig. 131—134. Peripheral transition loops or festoons,—arterial capillary festoons.

Fig. 131. The most simple form of this mode of termination.

Fig. 132. A more complex form of the same mode of termination.

Fig. 133. Another and yet more complex form of the same mode of termination.

Fig. 134. Apparent terminal loops or nooses, each minute twig returning into itself.

Fig. 135. Tassel-like terminations of an artery (from the fœtal placenta of the horse.)

Fig. 136. The vessels of two intestinal villi, magnified 160 diameters (colon of the horse.)

a. A delicate arterial twig of the intestinal tunics.

b b b. Bifurcate subdivisions of the same at the bases of villi.

c c c. Distribution of the finest arterial twigs at the edges of the villi. They form a delicate rete in the villi with the vein which courses along the centre of each villus. The veins of the two villi represented are seen united in the common branch *d.*

Fig. 137—152. Peripheral relations of the blood-vessels of different tissues of the human body, after Berres's microscopical observations. The same forms are shown by my preparations to occur among the mammalia.

Fig. 137. The simple arterial loop or noose. This distribution is particularly met with at the points of the fingers and toes, under the nails, on the Schneiderian membrane, on the surface of the tongue, and in the mucous membrane of the mouth.

Fig. 138. Palm-formed arterial distribution, common in mucous membranes. From the tongue of a young subject.

Fig. 139. Complex, fasciculate and anastomatic distribution. Tongue of a child.

Fig. 140. The vascular rete of the salivary glands, which lies over the arborescent arterial plexus of these organs,

e f g. A terminal loop which turns round more abruptly.

h. A third terminal fibril, whose course is indicated by the letters *k*, *l*, *m*, *n*.

Fig. 163. A delicate soft fasciculus of the sympathetic.

a a a a. Four primary fibrils, separated by delicate fibres of the general investing sheath.

b b. Two primary fibrils lying deeper, and scarcely to be distinguished.

c c c. Delicate cellular fibrils between the nervous fibrils.

d d. Stronger investing cellular fibres.

e e. Still stronger and more condensed external sheath of cellular fibrils (perhaps tubuli of cellular tissue surrounding one another concentrically.)

Fig. 164—238. Figures having reference to the Terminology.

A. Drops in their various relations to the bodies with which they are in contact and the magnifying power.

Fig. 164. Flat, spread out, round-shaped drop.

— 165. Flat, spread out, elliptical drop.

— 166. A spherical drop, the most remote point of which is in the focus of the magnifier or microscope.

Fig. 167. The same drop removed till its centre is in the focus of the magnifier.

Fig. 168. The same drop the upper point of which is now in the focus,—the nearest point of the surface of the drop is at focal distance from the magnifying power.

Fig. 169. Drops illuminated from the side and from above, in a less consistent medium.

B. Crystals.

Fig. 170. A flat or short four-sided pyramid, with truncated apex.

Fig. 171. A cubical cyrstal.

— 172. Rhomboidal tables.

— 173. Three-sided prism.

— 174. Six-sided prism.

— 175. A three-sided pyramid.

Fig. 176. Acicular crystals.

C. Grit, gravel, amorphous deposits.

Fig. 177. Globular gravel.

— 178. Granular gravel.

— 179. Mulberry-like gravel.

D. Flat formations.

Fig. 180. Six-sided } scale.

— 181. Eight-sided } scale.

— 182. Elliptical } scale.

— 183. Lamina, or lamella.

— 184. Flat fibre.

— 185. Squamous fibre.

— 186. Simple or unilamellar squamous membrane.

E. Granules, and granular formations.

Fig. 187. Granules.

— 188. Globules.

— 189. Granular band or fibre.

— 190. Granular corpuscle.

— 191. Granular fibrous bundle.

— 192. Granular membrane.

F. Nuclei, nucleoli, and round fibrous formations.

Fig. 193. Nucleoli in cells (*a.*) Nucleolus in nucleus (*b.*)

— 194. Cylindrical or round fibres, fibrils, filaments.

— 195. A bundle or fasciculus of fibres.

— 196. A fibrous cord (a smaller collection of fibres than a fasciculus.)

Fig. 197. A fibrous tissue.

— 198. A fibrous net or rete.

— 199. A fibrous grating.

— 200. A fibrous membrane.

— 201. A fibrous fascicular tissue.

G. Nuclei and nucleolated nuclei.

Fig. 202. A nucleus in an elongated rounded cell. *b.* Nucleus in a six-sided cell.

Fig. 203. Nuclear or nucleolar fibre.

— 204. Nucleolated nucleus in the cell.

— 205. 1. Blood-corpuscles or globules. *a* Nucleus (investment, envelope.) *b* Nucleolus (nucleus.)

Fig. 227 and 228. Change of the young cell into a scale, in section. In a—e. the nucleus is still recognizable. In f. the formed scale, it has disappeared.

K. Living animals in the living mammal now as constituent elements, and again as adventitious parasites.

Fig. 229 and 230. Cysticercus cellulosæ.

— 229. Cysticercus cellulosæ of the natural size.

a. Head.
b. Neck.
c. Caudal vesicle.

Fig. 230. Head, neck, and part of the body of the cysticercus highly magnified.

a. Point of the mouth.
b. The double circle of hooklets.
c c. Suctory papillæ.
d. Neck.
e. A part of the body.

Fig. 231—234. Seminal animalcules and seminal corpuscles from the epididymis (guinea-pig.)

Fig. 231. A seminal animalcule very highly magnified, seen from the abdominal aspect.

a a. The rounded margin of the flat spoon-shaped body.

b. Internal vesiculi (probably botryoidal stomach.)

c. Two globular organs (internal organs of generation? ovaries?)

d. Oral aperture on the oral papillæ.

e. Genital and anal orifice on the posterior papillæ.

+ Notch between the body and the tail.

f. Caudal papillæ.

g. Tail.

h. Imperfect loop or coil which the tail generally forms when not in use.

Fig. 232. A seminal animalcule less highly magnified, seen from the side. Great part of the tail is left out.

Fig. 233. Five seminal animalcules in apposition, packed like table spoons one within the hollow of the other.

Fig. 234. A seminal corpuscle and three isolated seminal globules.

Fig. 235 and 236. Entozoon from the folds of the conjunctiva of the eye of the horse (Filaria papillosa.)

Fig. 235. The entozoon of the natural size.

— 236. The same magnified 6 diameters.

a. Oral aperture.

b. Top of the œsophagus.

c. The intestine lying in coils.

d d. Part at which the animal was accidentally injured, and through which the intestine has protruded.

e. Anus.

f. The conical shaped point of the tail.

g g. The ovaries.

h h. The genital orifices.

Fig. 237. Ovum of an entozoon from the intestines of the horse, highly magnified.

Fig. 238. Acarus scabiei—magnified.

— 239. Development of the sebaceous glands of the skin from the palm of the human fœtus (Valentin.)

Supplement to the formation of the glands.

a. Round inversion of the epidermis.

b. The inversion advancing, a pediculated vesicle is formed.

c. The pediculated vesicle begins to turn round spirally like a corkscrew.

d. The follicle divides into two lappets. The excretory duct makes a complete spiral turn.

e. The two glands are completely divided, the elementary vesicles more numerous and more distinct. The excretory duct now makes three spiral turns.

f. The gland nearly perfectly evolved, consists of numerous elementary vesicles, which form botryoidal clusters, each vesicle connected by its duct with another, and all ending in one common efferent canal, which now makes four spiral turns between its origin and its termination on the surface.

traumatic inflammation of the peritoneum of the horse. The lymph was very friable, and had only been a few days effused. It is composed of globules, smaller molecules, and granular matter in a hyaline matrix. In the lower part of the figure the granules and molecules are shown as floating in serous fluid from the clot. (See page 29; also fig. 272.)

Fig. 244. Portion of fibrine exhibiting an appearance of fibrils. Magnified nearly 700 diameters. From the heart of a child about 24 hours after death.

Fig. 245. Another portion of the same clot as in Fig. 244, similarly magnified, and showing a faint appearance of globules between the fibrils.

Fig. 246. Corpuscles in fibrine, obtained by whipping, from the blood of a horse. About the centre a corpuscle is shown, though obscurely, composed of a congeries of minute spherules, as mentioned in the note p. 34, and Appendix, p. 21. Magnified 700 diameters.

Fig. 247. Fibrine from the same blood as Fig. 246. The fibrine was boiled, and the corpuscles and fibrils are shown in a very thin slice. A cluster of the corpuscles is seen, though not very prominently, in the upper part of the figure. Magnified 700 diameters.

Fig. 248. The corpuscles rendered more distinct, and their nuclei shown, by the aid of acetic acid. The fibrine was obtained from the same blood as in Figs. 246 and 247. Magnified 700 diameters.

Fig. 249. Corpuscles in a clot of fibrine from the heart of a child, aged two months. The corpuscles have a corrugated appearance, and the intervening matter is very minutely granular. Magnified 800 diameters.

Fig. 250. Nuclei shown by soaking the fibrine for a while in sulphurous acid. The matrix has a finely granular appearance. From the fibrine of a horse, four days before death from inflammatory fever following an injury.

Fig. 251. Very distinct nuclei and faint envelopes, exposed by acetic acid, in fibrine from the venous blood of the horse. This and Fig. 250. were both made from fibrine in which it was difficult to distinguish the nuclei

or corpuscles till the acids were used. Both Figures were drawn with the camera lucida and a magnifying power of 800 diameters.

(The figures 243 to 251 are spoken of more fully in the note at p. 29, et seq. and in Sect. 5 of the observations on the blood-corpuscles of Mammiferous Animals in the Appendix.)

Figs. 252—255 exhibit the structure of *tubercle* made up chiefly of irregular corpuscles and cells, with oblong and circular nuclei. A very minutely granular matter is situated between the corpuscles and cells, which indeed it often seems to pervade. Fig. 252. is from a small crude tubercle of the lung, about as big as a hemp seed: the envelopes are very faint, and the nuclei of small size. Fig. 253. is from a similar tubercle which was situated immediately beneath the pulmonary pleura; the envelopes are obscured by the granular matter, while the nuclei are of large size and distinctly marked. Fig. 254. is from a small tubercle obtained from the peritoneal coat of the small intestine; the envelopes are here also very faintly seen, but the nuclei are perfectly distinct, and some of these inclose nucleoli. Fig. 255. shows very distinct cells, and nuclei containing spherical molecules in their substance, as appears also to be the case in some of the nuclei of fig. 254. In the lower part of fig. 255 an aggregation of similar molecules forms an oval corpuscle almost as large as a cell.

All the figures were made from portions magnified 800 diameters; and in Figs. 252—254. the tubercular matter was of the common yellowish opaque kind, and obtained from a man, aged 26, who died of pulmonary phthisis; he had also numerous tubercles in the mesentery, in the omentum, and on the surface of the intestines. Fig. 255. was taken from a very minute tubercle from the surface of the ovary. The tubercular matter was paler than that which formed the subjects of Figs. 252—254, but still quite opaque. It was obtained from a woman, aged 48, who died of general dropsy connected with valvular disease of the heart. There was much fluid in the belly, and the from the mixture of æther with chyle: these appear more delicate and pellucid than oily spherules.

Fig. 283. Chyle globules treated with dilute muriatic acid. Most of them are somewhat enlarged, and exhibit an appearance of nuclei contained in transparent envelopes, probably from changes produced by the acid on the surface of the globules.

Fig. 284. Thymous fluid from the same puppy as the chyle Fig. 277, and the lymphatic juice Fig. 279. This thymous fluid is as usual rich in globules; and a few oil-like spherules are present. But it is totally destitute of the peculiar molecular base of the chyle, and a comparison with Fig. 277 will at once show the difference in question.

Fig. 285. Thymous fluid from a young ass.

Fig. 286. The same from a young dromedary. The globules are seen to be similar in shape to those of animals with circular blood discs. It will be recollected that the blood corpuscles of the dromedary are oval.

Fig. 287. Thymous globules of the same dromedary treated with acetic acid, by which they are rendered a little smaller, smoother on the surface, more distinct and translucent; the appearance of nuclei is more clearly seen than is usually the case after mixing acetic acid with thymous globules.

Figs. 288—291. Corpuscles in the muscular fibre of the heart, and in the mitral valve, magnified 800 diameters. The corpuscles may sometimes be seen, though rather indistinctly, without the aid of reagents. Acetic acid was used to render the corpuscles distinct for the drawings.

Mr. Bowman (Phil. Trans. part ii. 1840) has depicted similar corpuscles in the fibre of voluntary muscle, and Dr. Baly in the flat bands of some of the muscular fibres of organic life, (Translation of Müller's Physiology, part ii. plate 2. Fig. 9.;) but he does not mention the heart. The primary fascicles or bands of this organ are often so intimately connected, that it is difficult to see them distinctly; but they are sometimes tolerably well defined, often appearing flattened, occasionally nearly or quite cylindrical. I have given measurements of them, in some mammals, in the note at p. 237.

In mammals the corpuscles vary in diameter from $\frac{1}{6000}$th to $\frac{1}{2000}$th of an inch; in the newt they are considerably larger. They are very irregular in shape, being sometimes rounded, often either oval or spear-shaped, and frequently still more elongated.

They may be found in a great variety of tissues. Mr. Bowman has seen the corpuscles in the coats of the capillary blood-vessels, in the sheath of nerve, and in the substance of tendon, and I have repeatedly observed corpuscles, either much resembling those depicted in Fig. 288, or more elongated, in parts too numerous to particularize. I may mention, however, the bag-like portion of the pericardium, the peritoneum, semilunar valves of the arteries, the coats of veins, and of the seminal tubes, and the dura mater. By the aid of the aqueous solution of sulphurous acid and the acetic acid, the corpuscles may generally be brought into view: they are supposed to be the remains of the cells, from which the tissues were originally formed.

Fig. 288. Corpuscles in the tissue of the mitral valve: they are more numerous than in the muscular tissue of the heart.

Fig. 289. Corpuscles in the tissue of the auricle.

Fig. 290. Corpuscles in the tissue of the ventricle. This and Figs. 288 and 289 are from the hedgehog.

Fig. 291. Corpuscles, of much larger size than the preceding, in the fibre of the ventricle of a water newt. (Triton Bibronii, Bell.)

Fig. 292, Epithelial corpuscles, magnified 800 diameters, from the gullet of a newt, (Triton Bibronii, Bell,) to show their large size in this reptile. They are generally more or less oval, often round: the eliptical form also occurs frequently in nuclei of the cells of mammiferous animals. In the note at p. 42, I have noticed that the epithelial corpuscles of the frog do not exceed in size those of man. In another examination these corpuscles were found to be slightly larger than in man, but having no sort of relation

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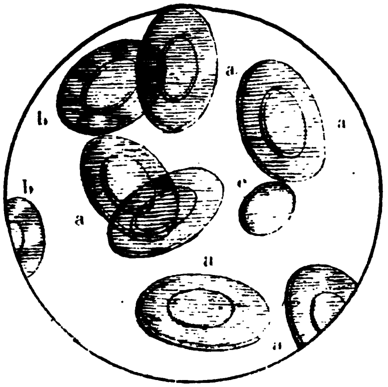

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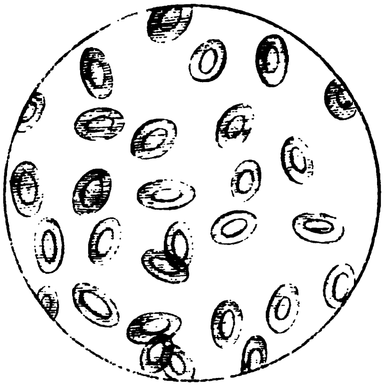

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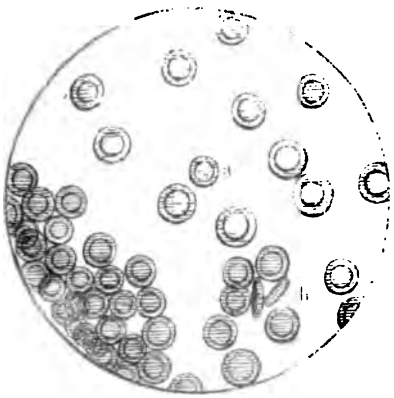

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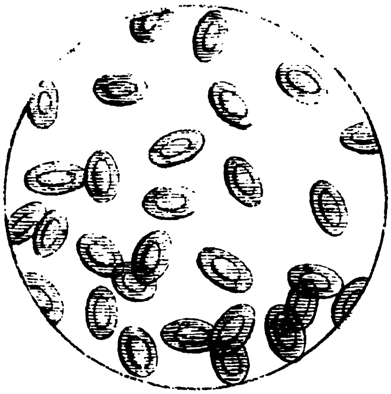

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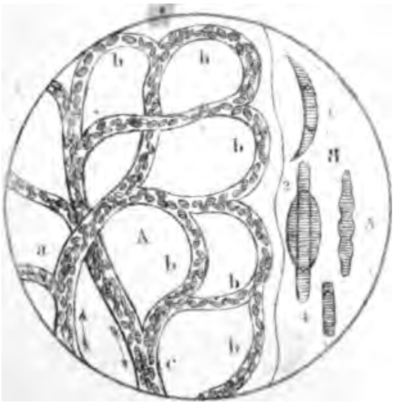

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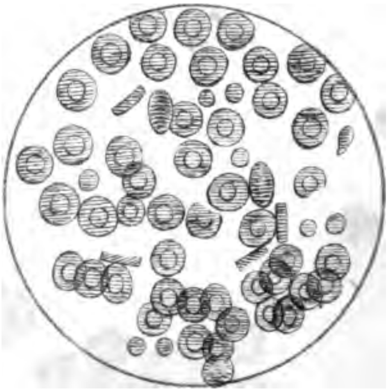

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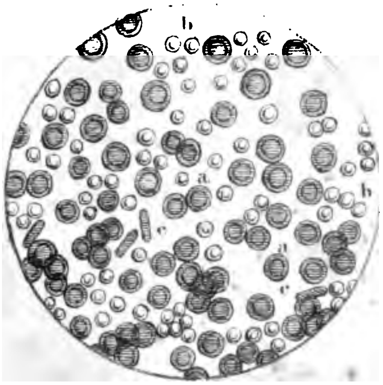
Pl. II.

GERBER'S GENERAL ANATOMY.

7



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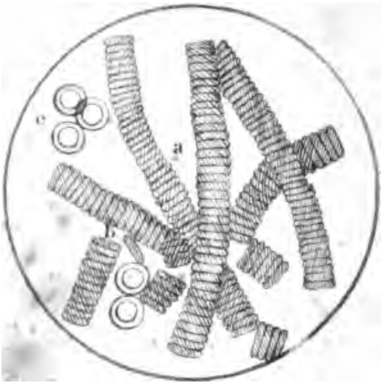

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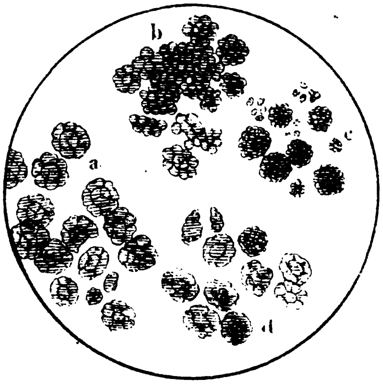

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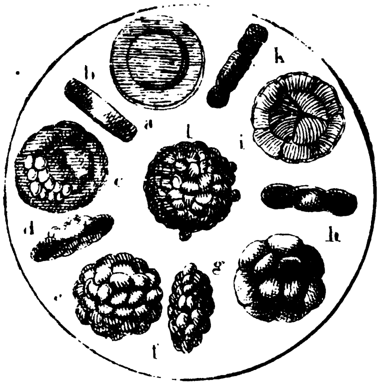

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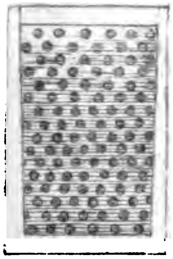

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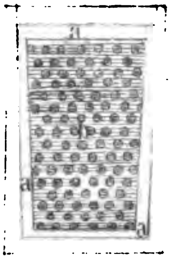

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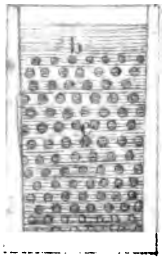

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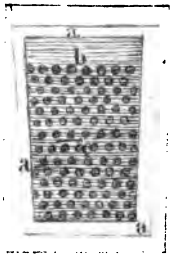

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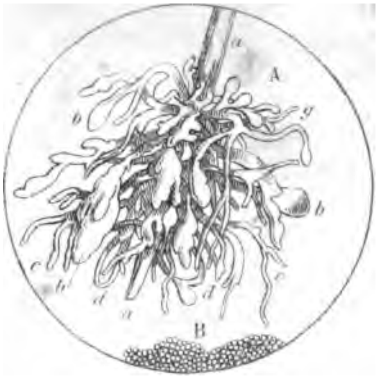
F 15



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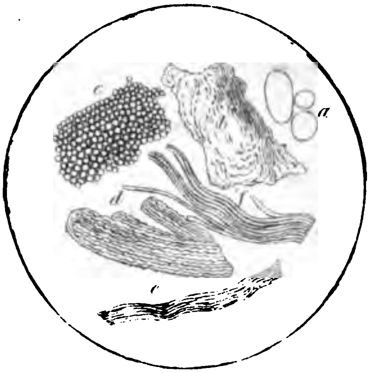

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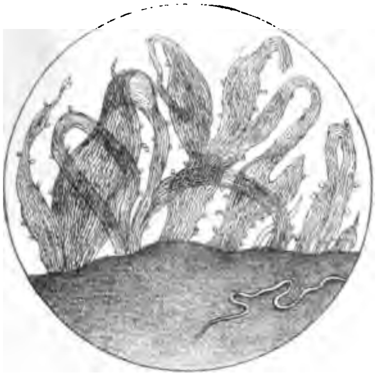

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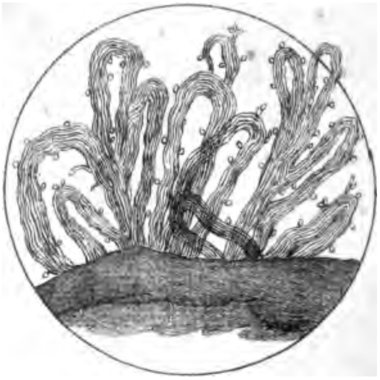

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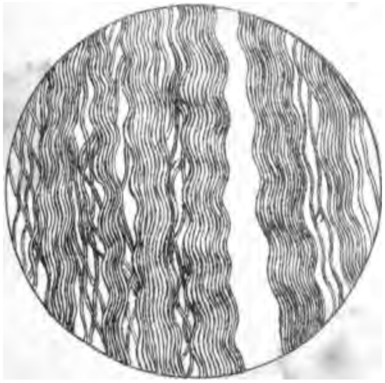

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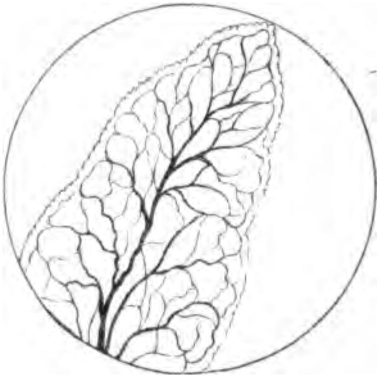
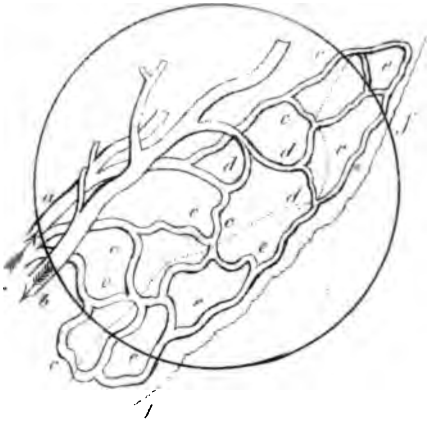


Geo. Albans del on Zinc.

PL. IV

F.21



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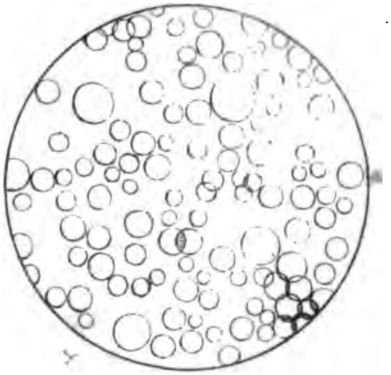

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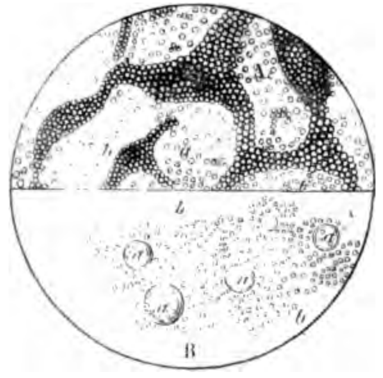

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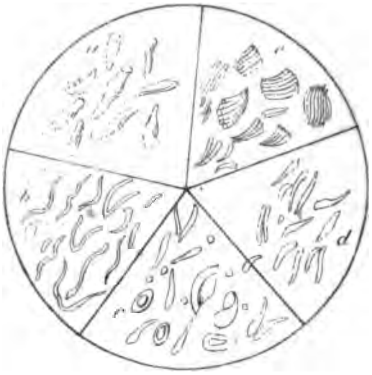

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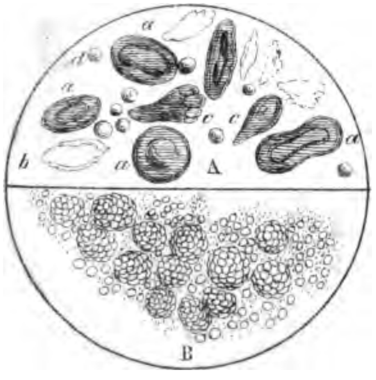

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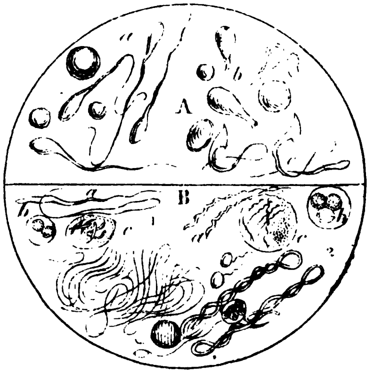
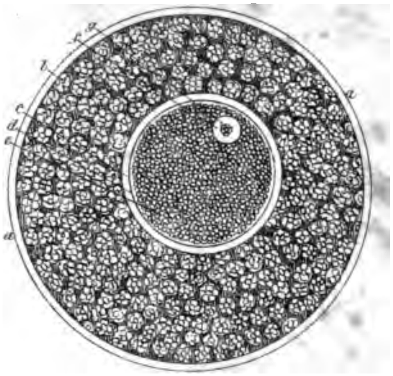


Lens Aldous del on Zn

F. 27.



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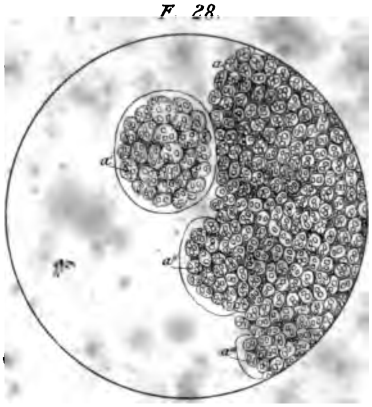

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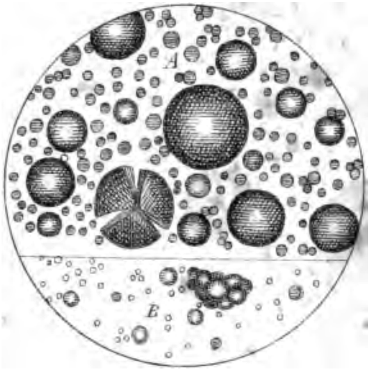

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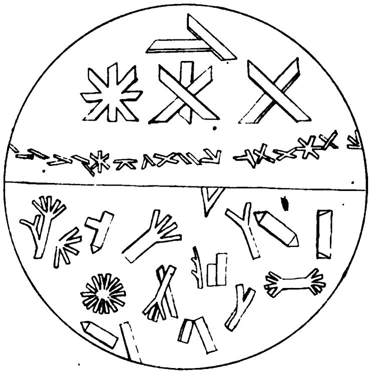

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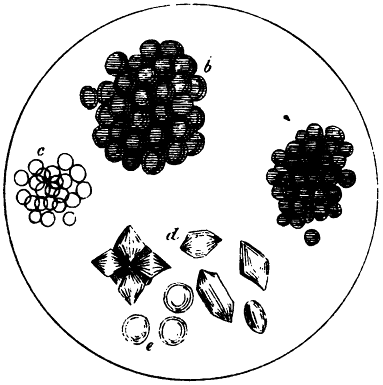

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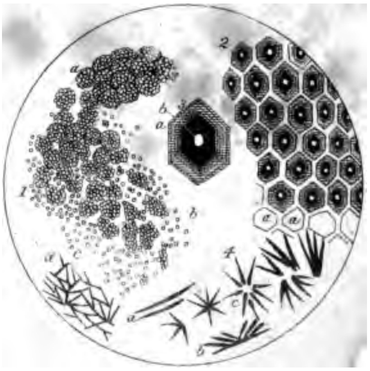
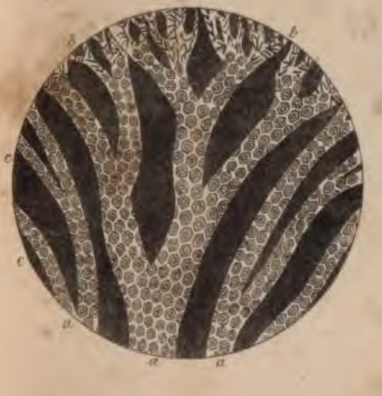


Mutlow, Litho.

F. 33



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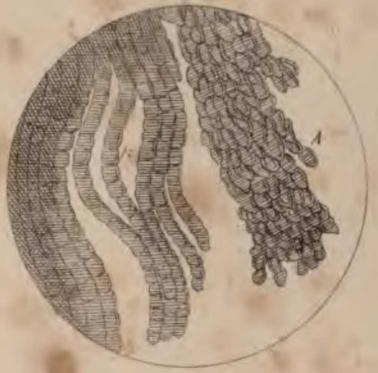

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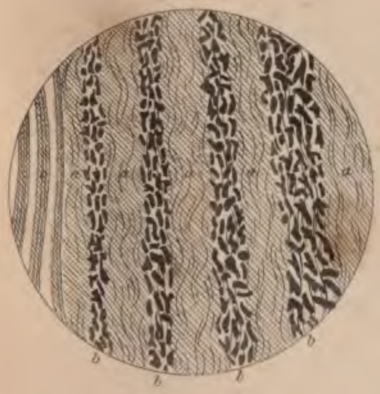

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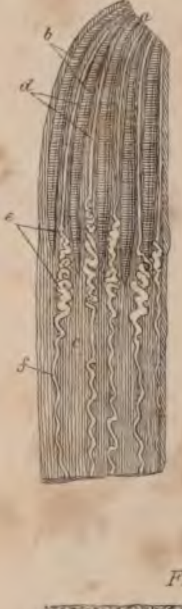

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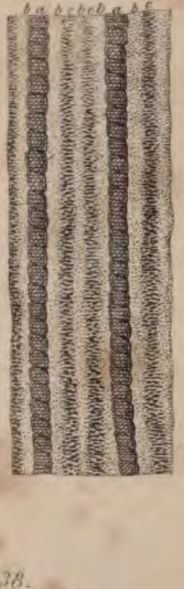

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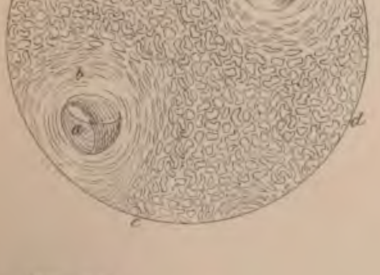

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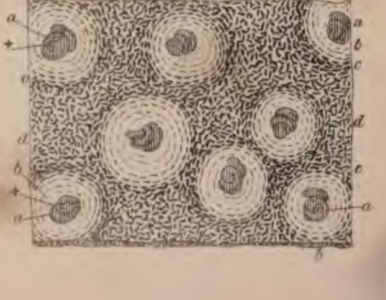

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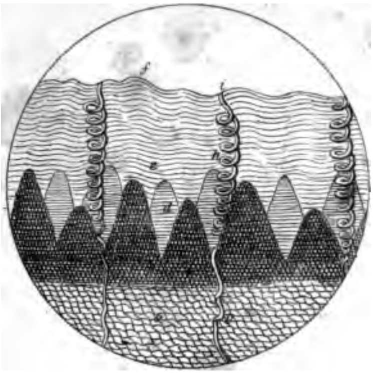

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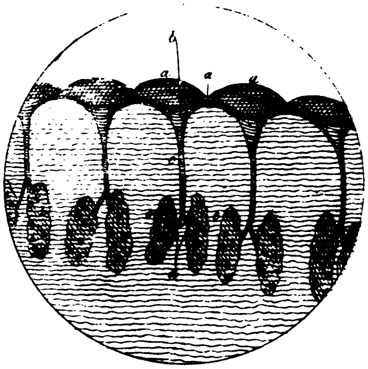

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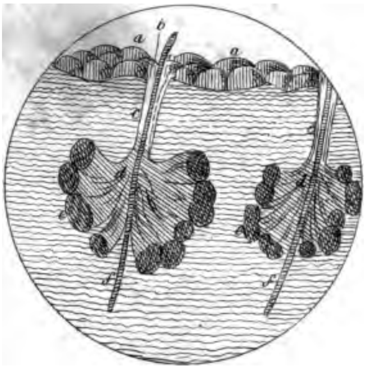

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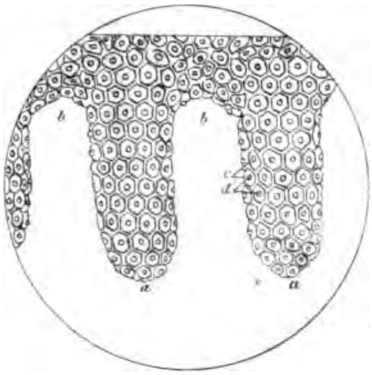

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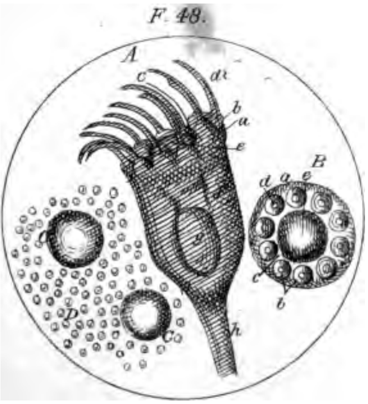

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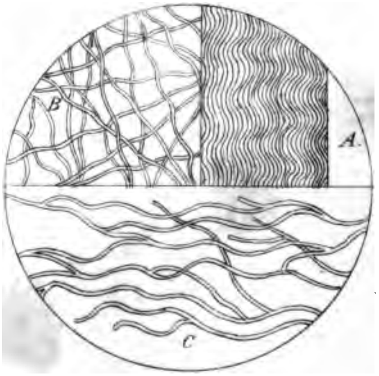
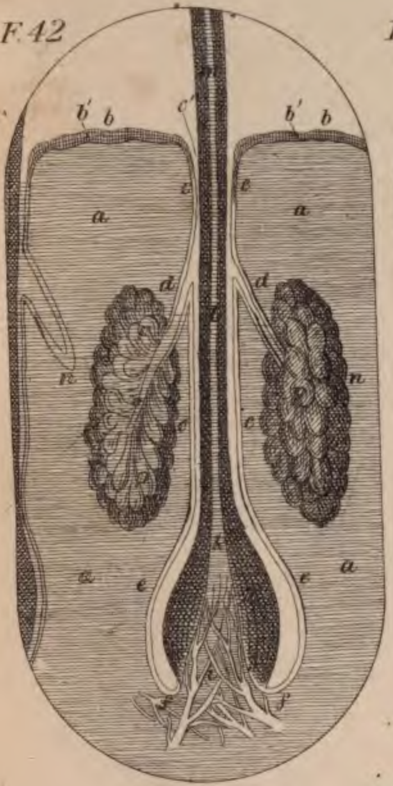


Madeley, Litho.

F. 42



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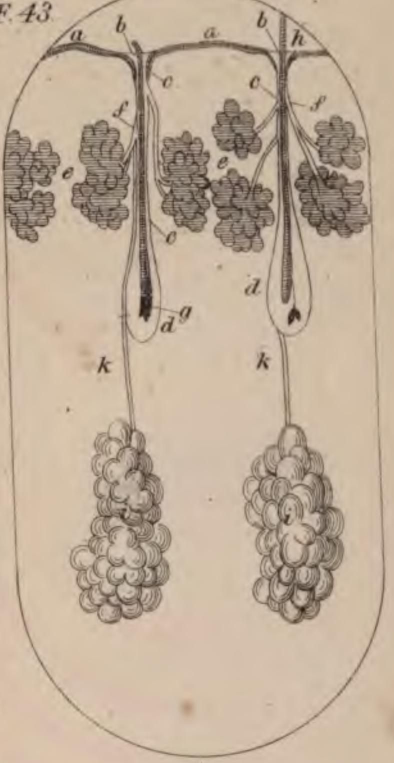
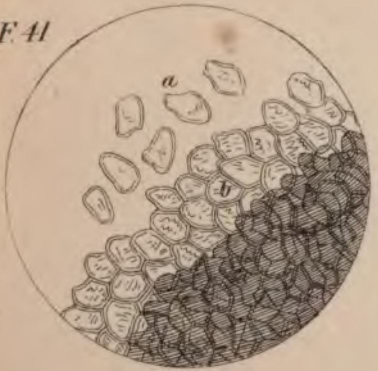
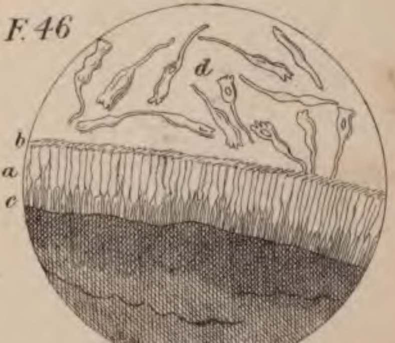


F. 41



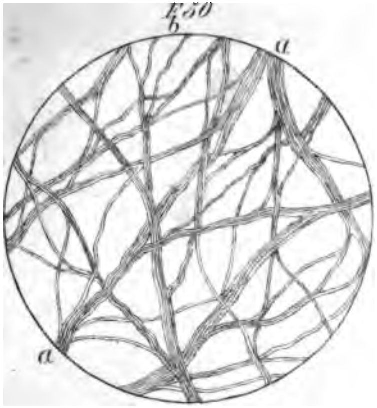
F. 46



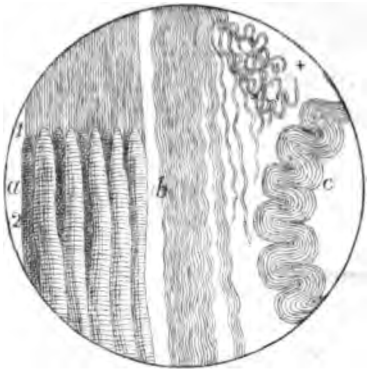
Madeley, Litho. 3 Wellington St. Strand.

GERBER'S GENERAL ANATOMY.

F.50



F.51



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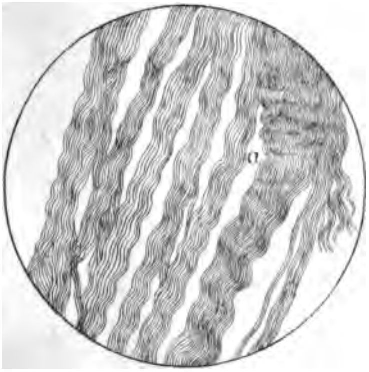

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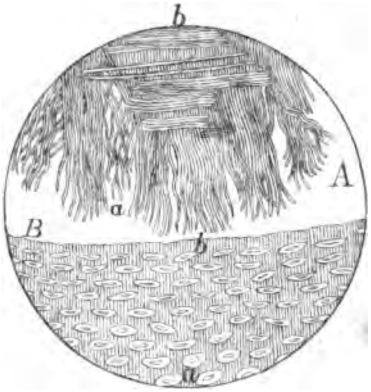

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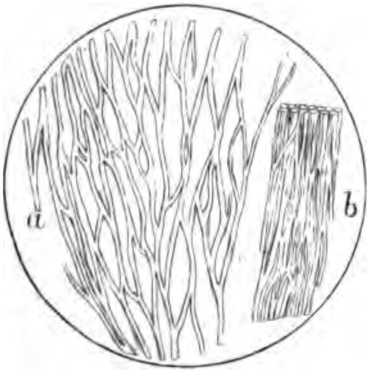

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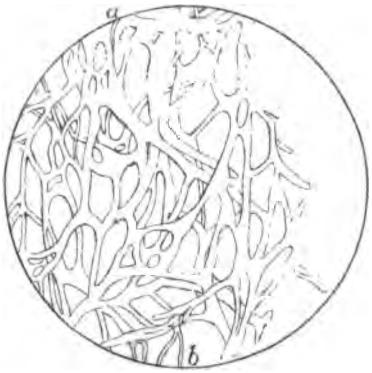
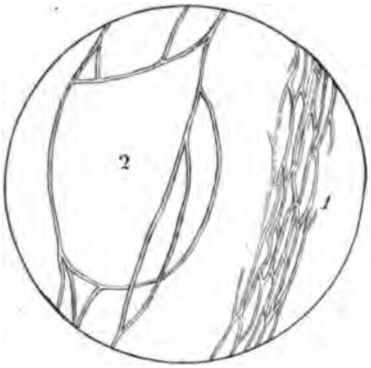


Lond. [illegible]

F.56



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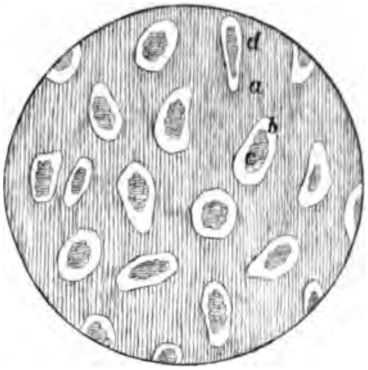
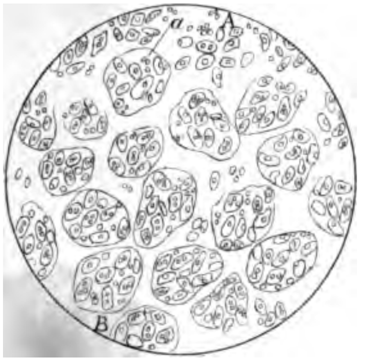
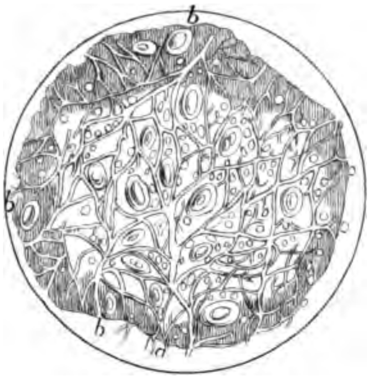


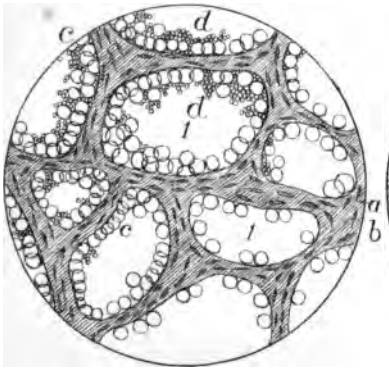
F.58



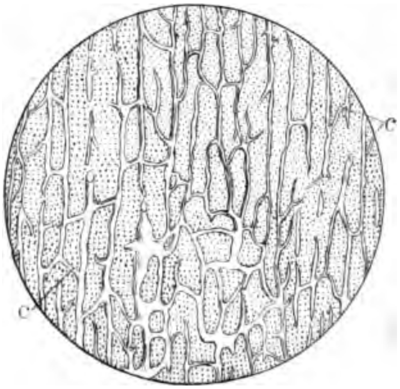
F.59



F.60

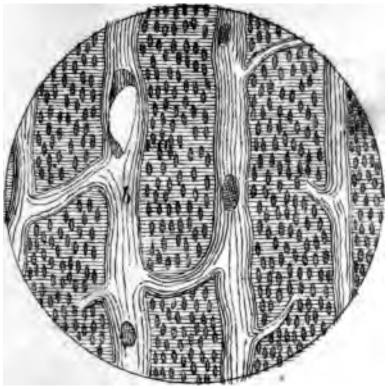


F.61



Leon Aldous zinco.

F. 62.



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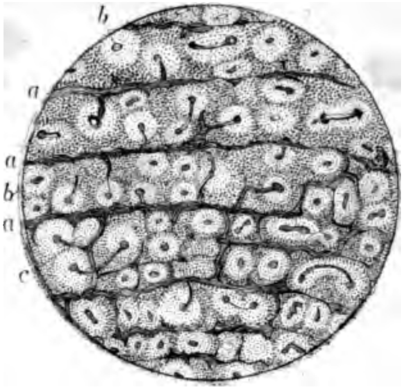

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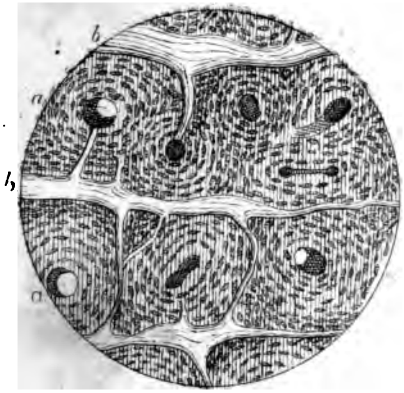

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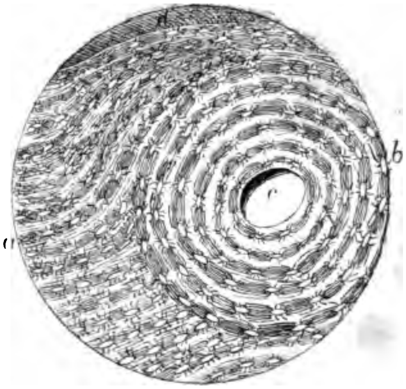

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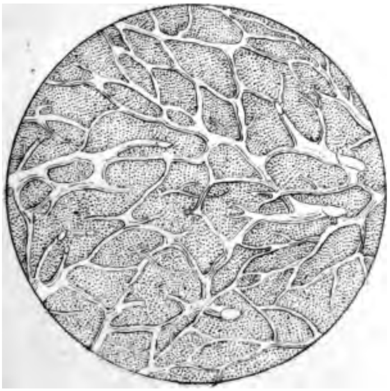
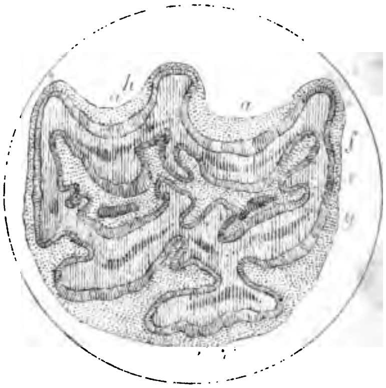


F. 67.



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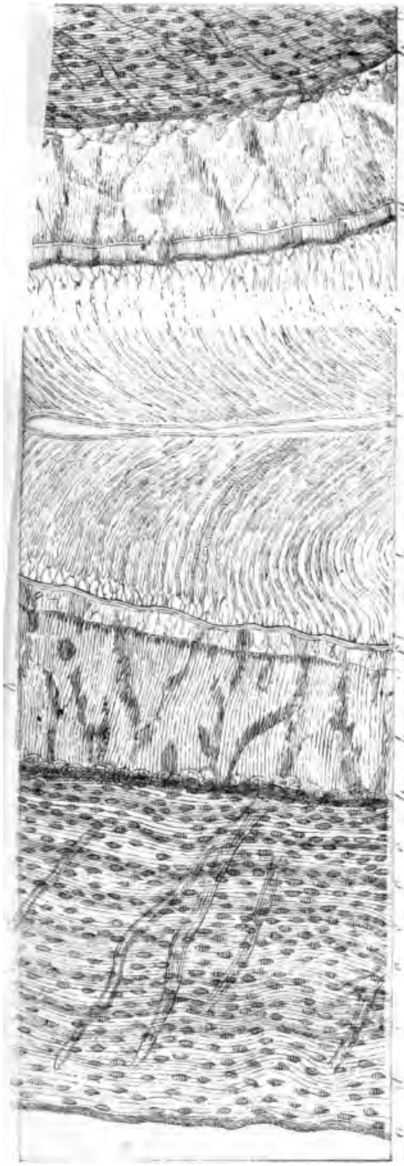
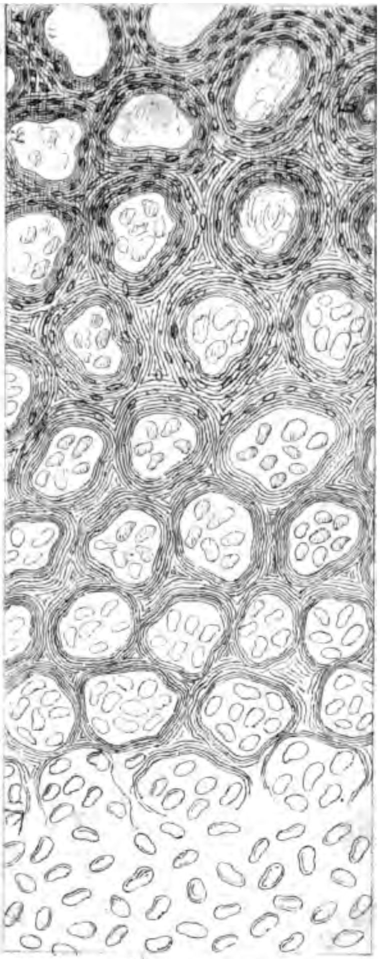
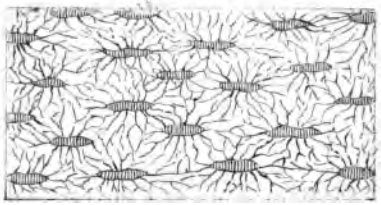
F. 68.



F. 69





F. 70.

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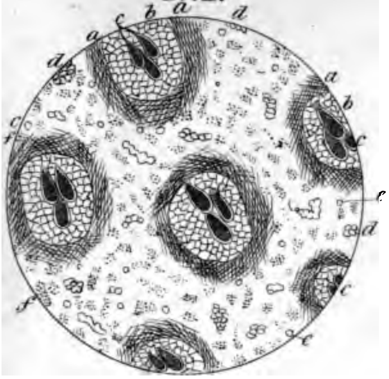
F. 71.



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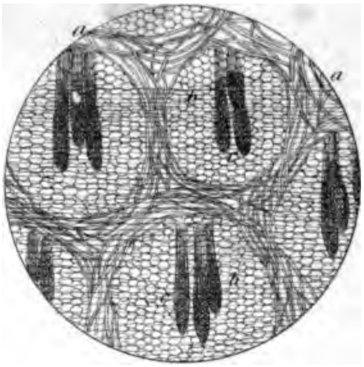

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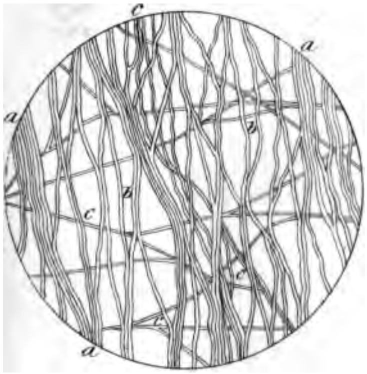
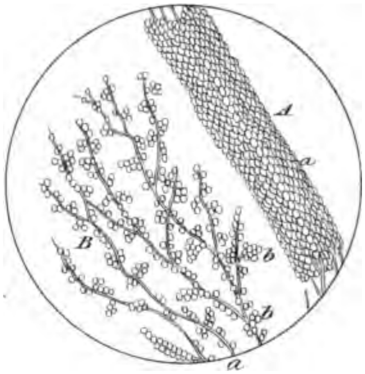


F. 74.



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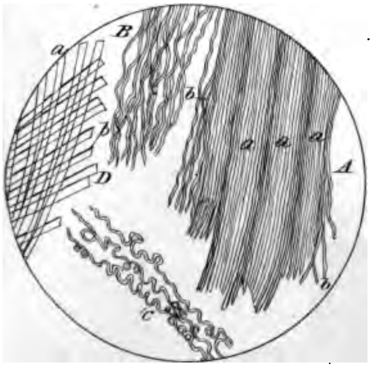

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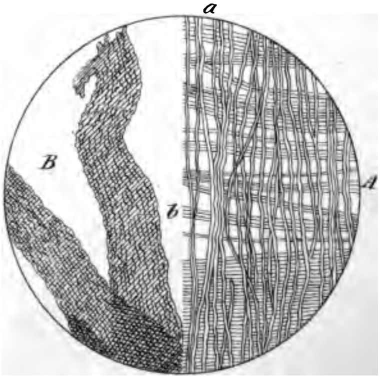

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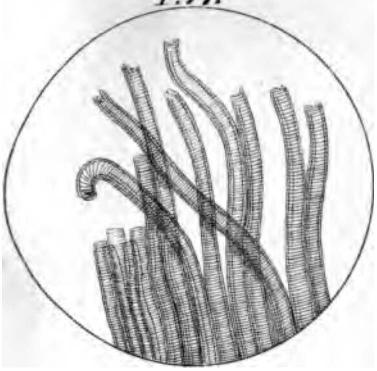
F. 77.



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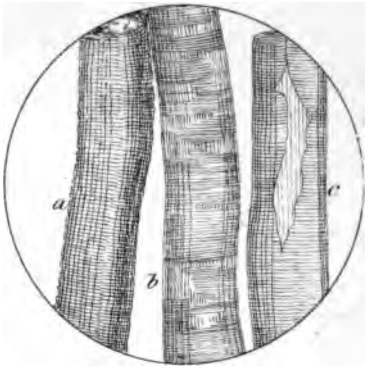

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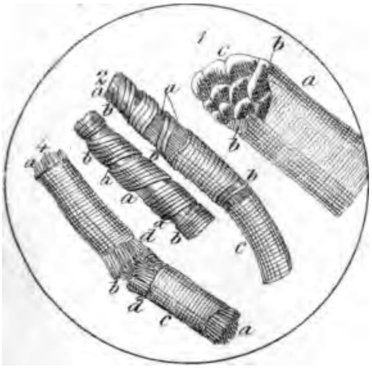

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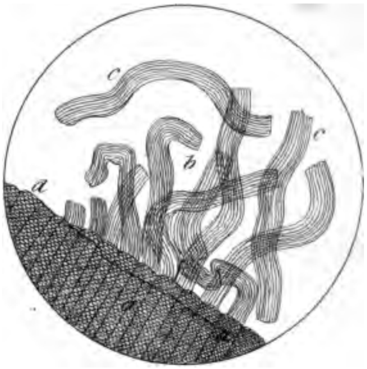

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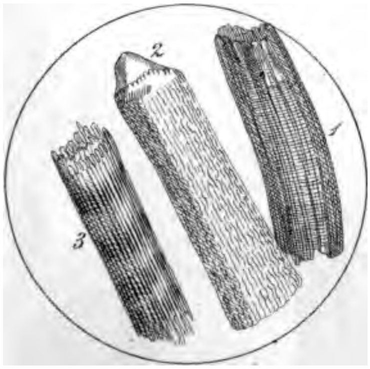

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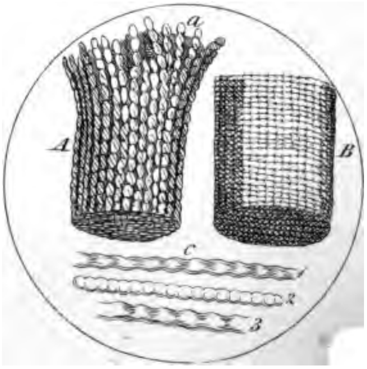

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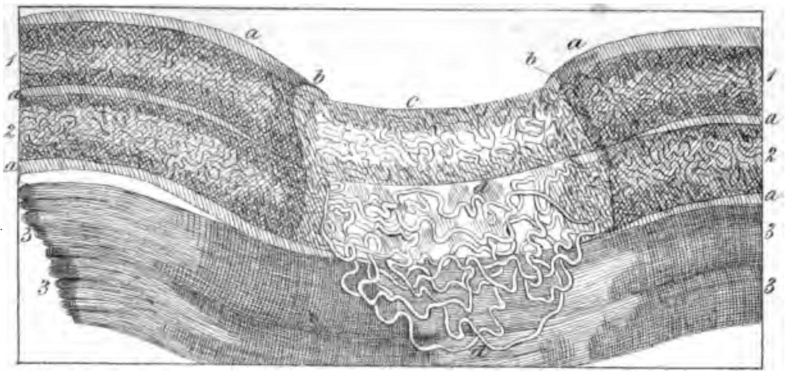

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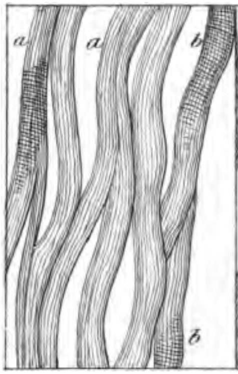

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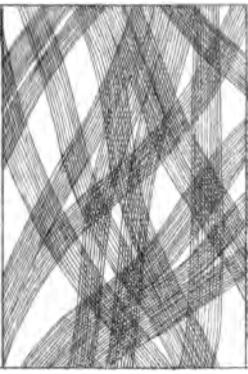

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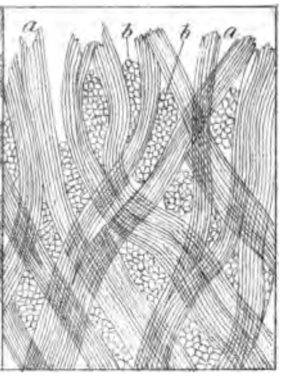

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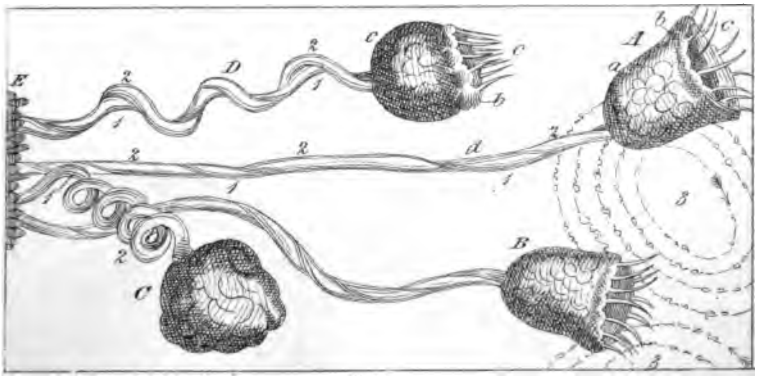

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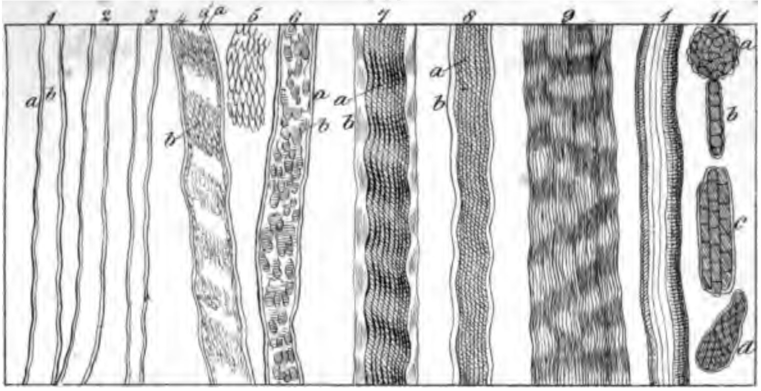
F. 88.



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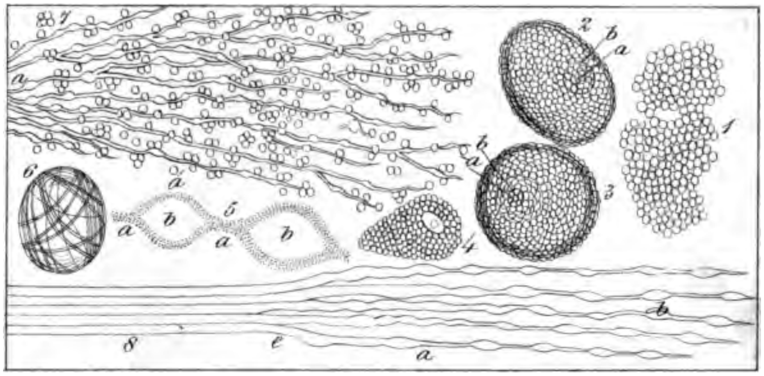

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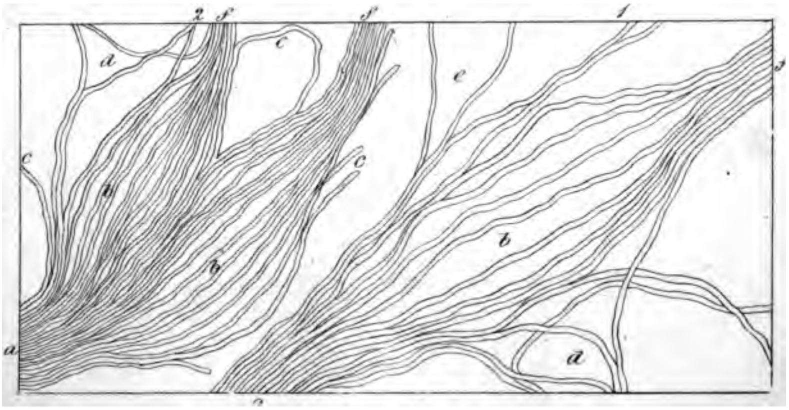

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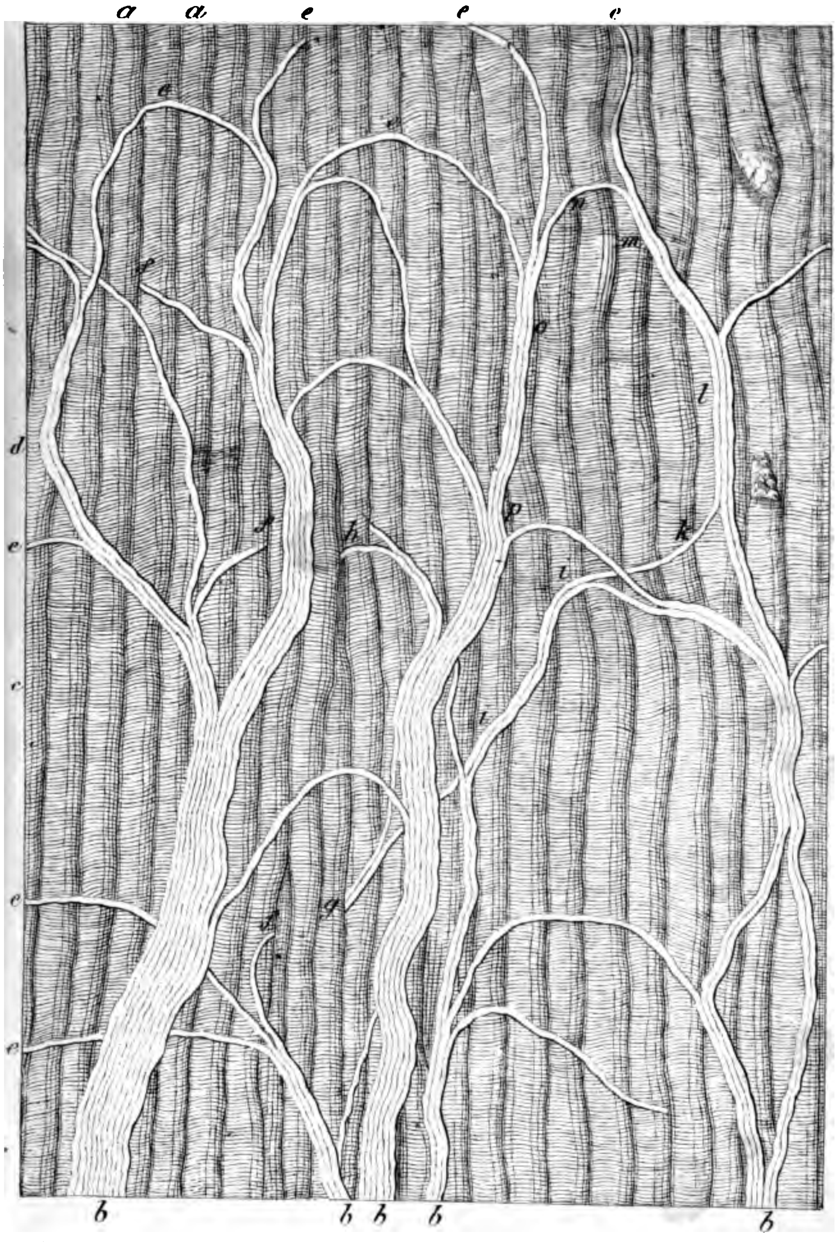
F. 91.



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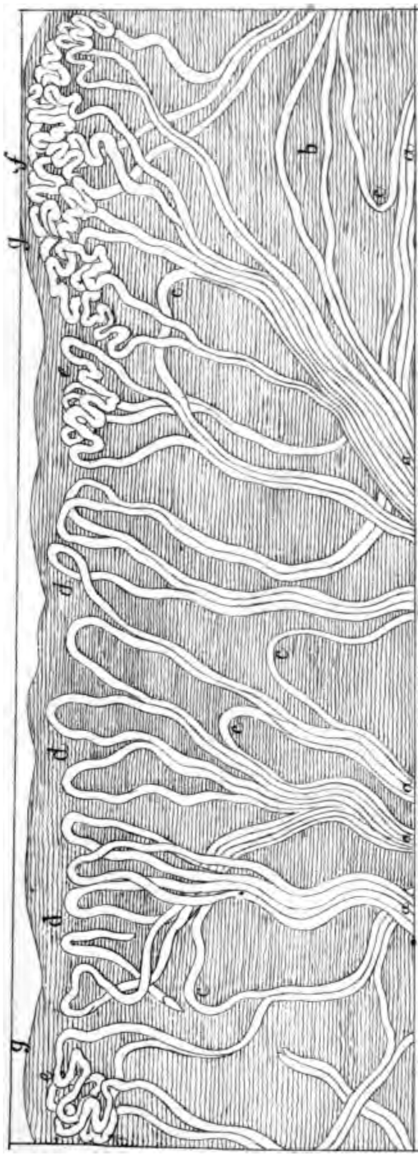
F. 92.



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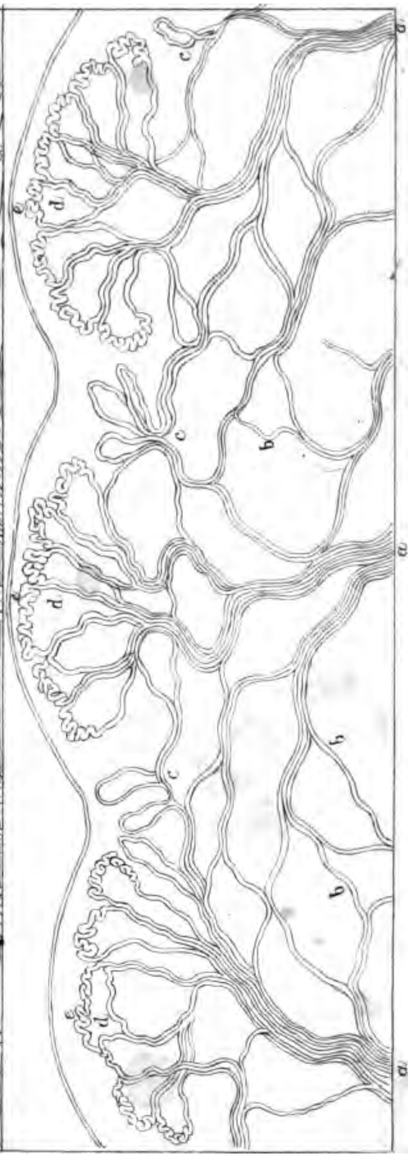

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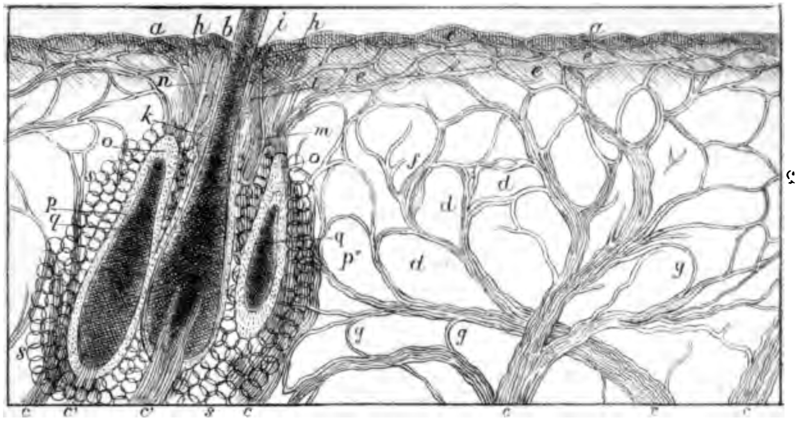
F.94.



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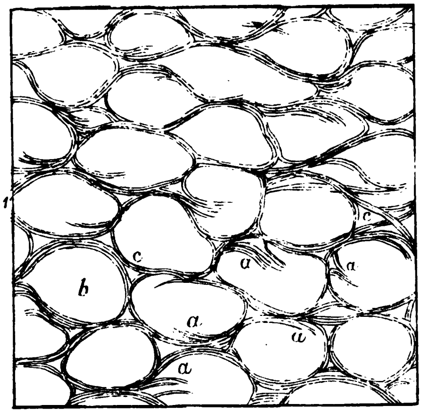

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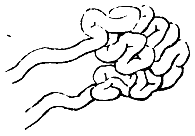
F.99



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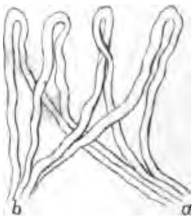

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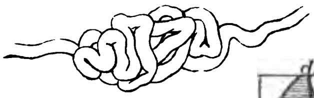

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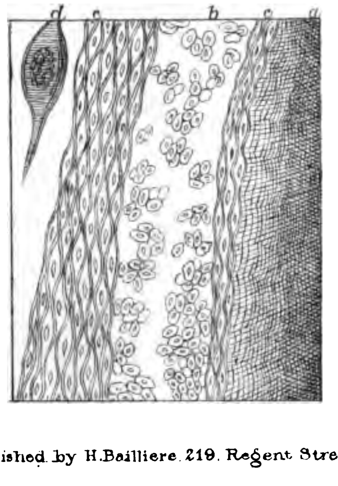

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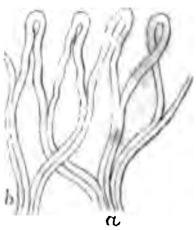

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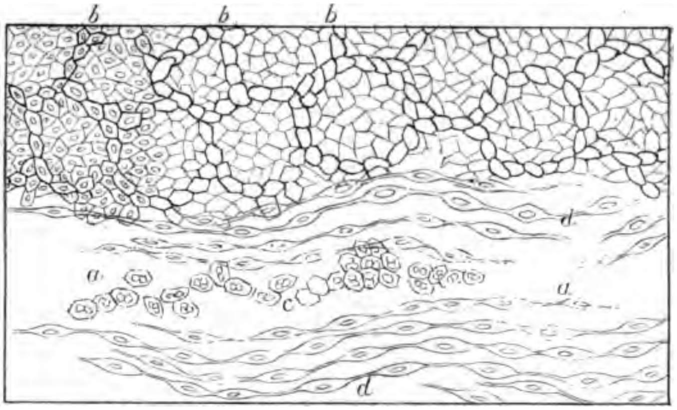
F. 103



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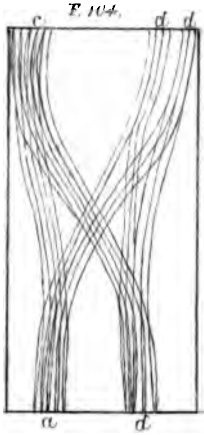

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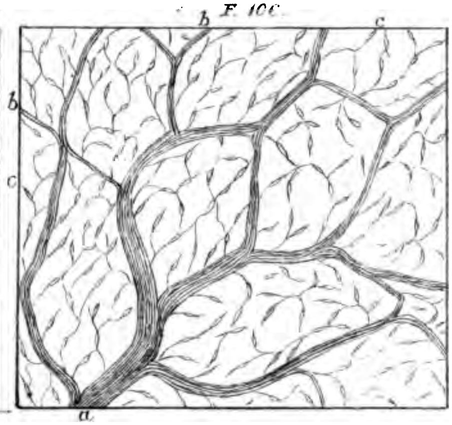

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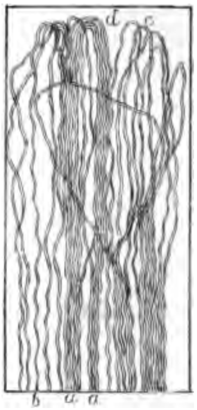

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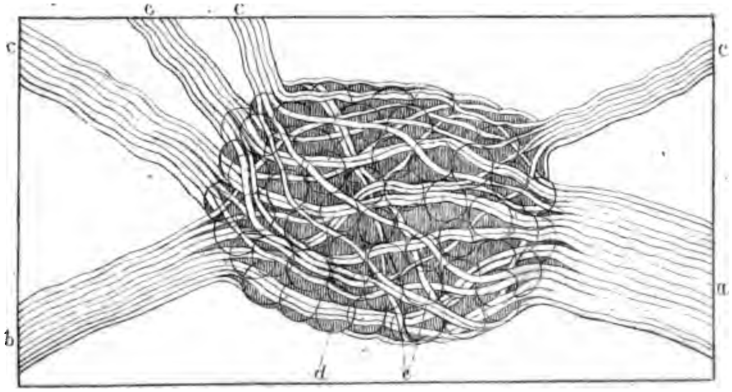

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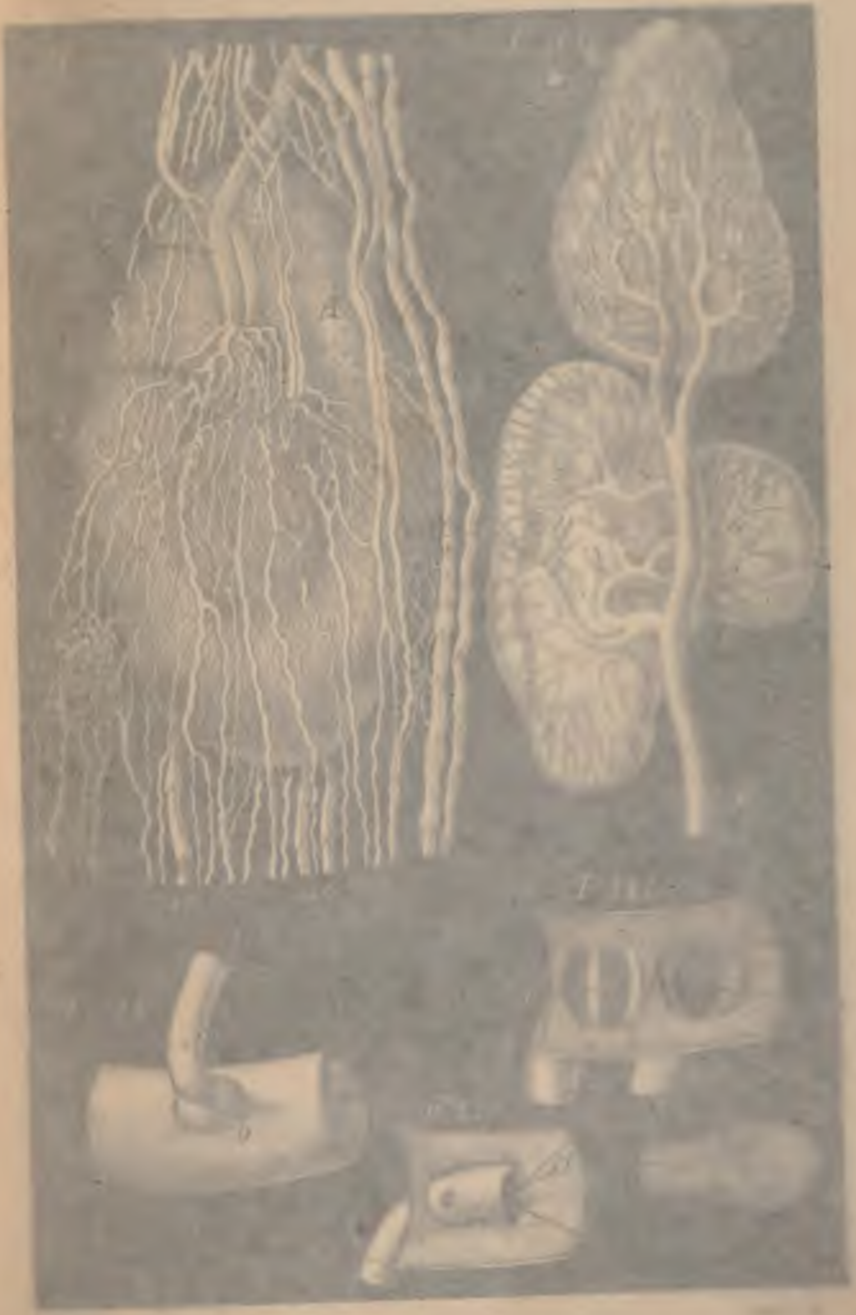
[illegible] [illegible] ARTERIES PL. XXI.



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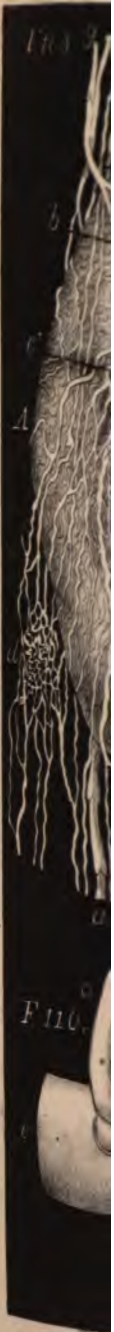

F 110

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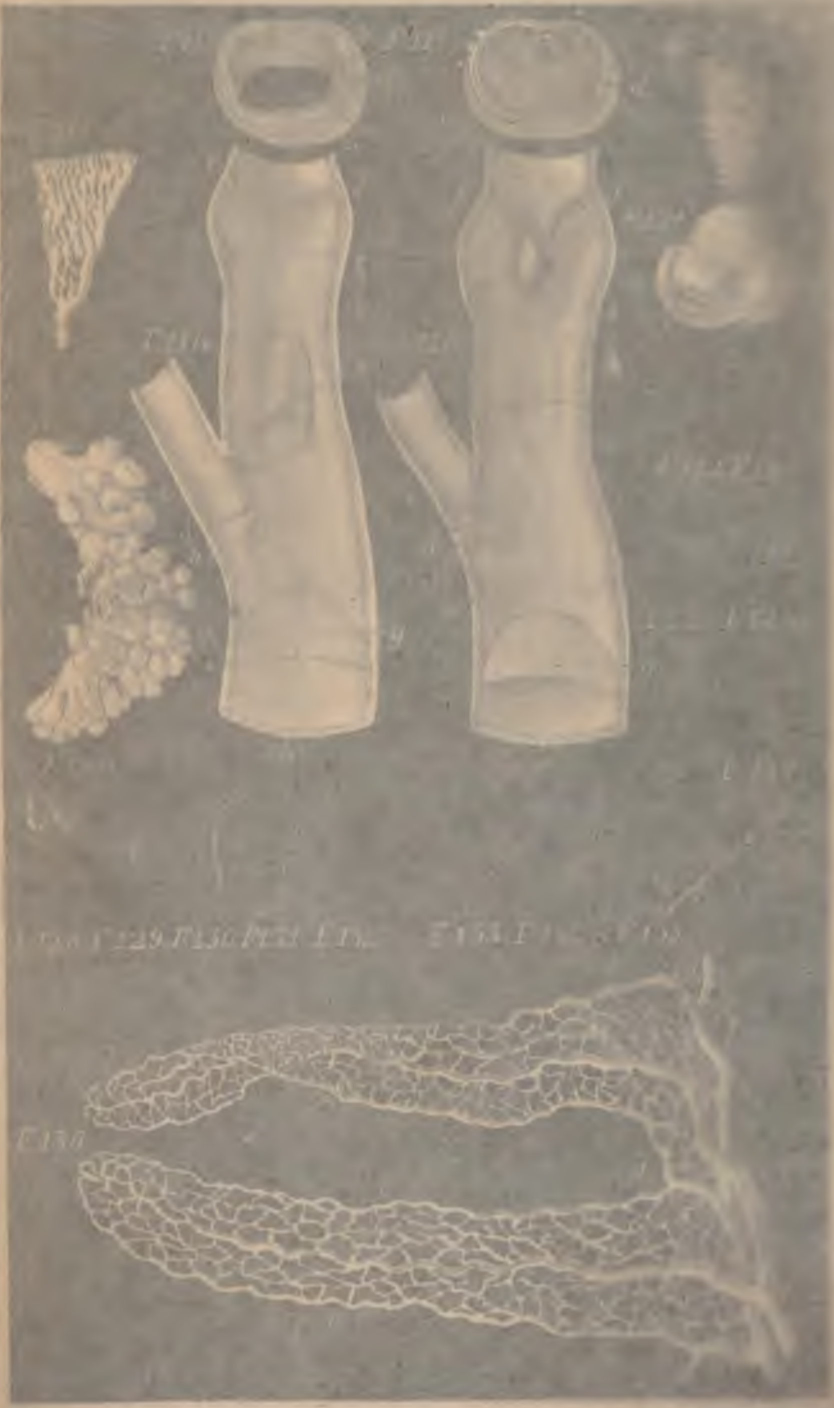
BICHAT'S GENERAL ANATOMY



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F.119
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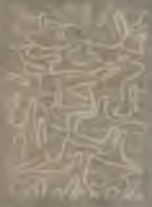
F.120.
F.128
F.129
F.136.

F.137



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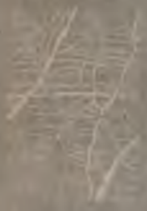
F.139

F.141



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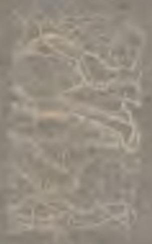

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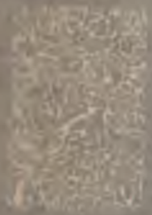
F.145



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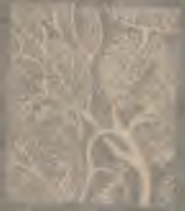

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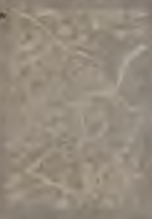
F.148

F.149



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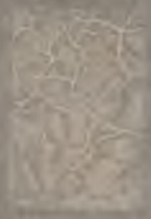

F.151

F.152

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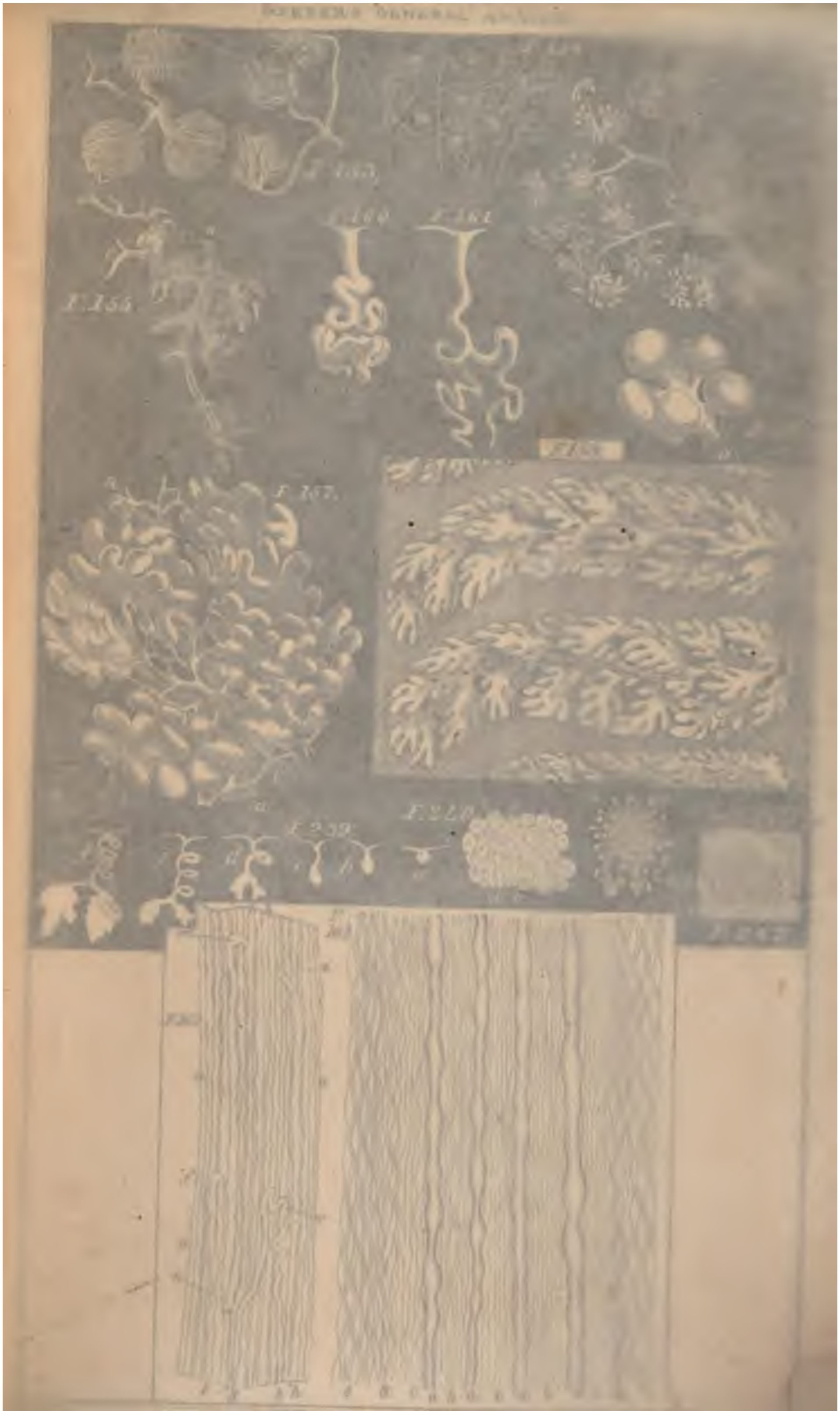
Fig. 7.

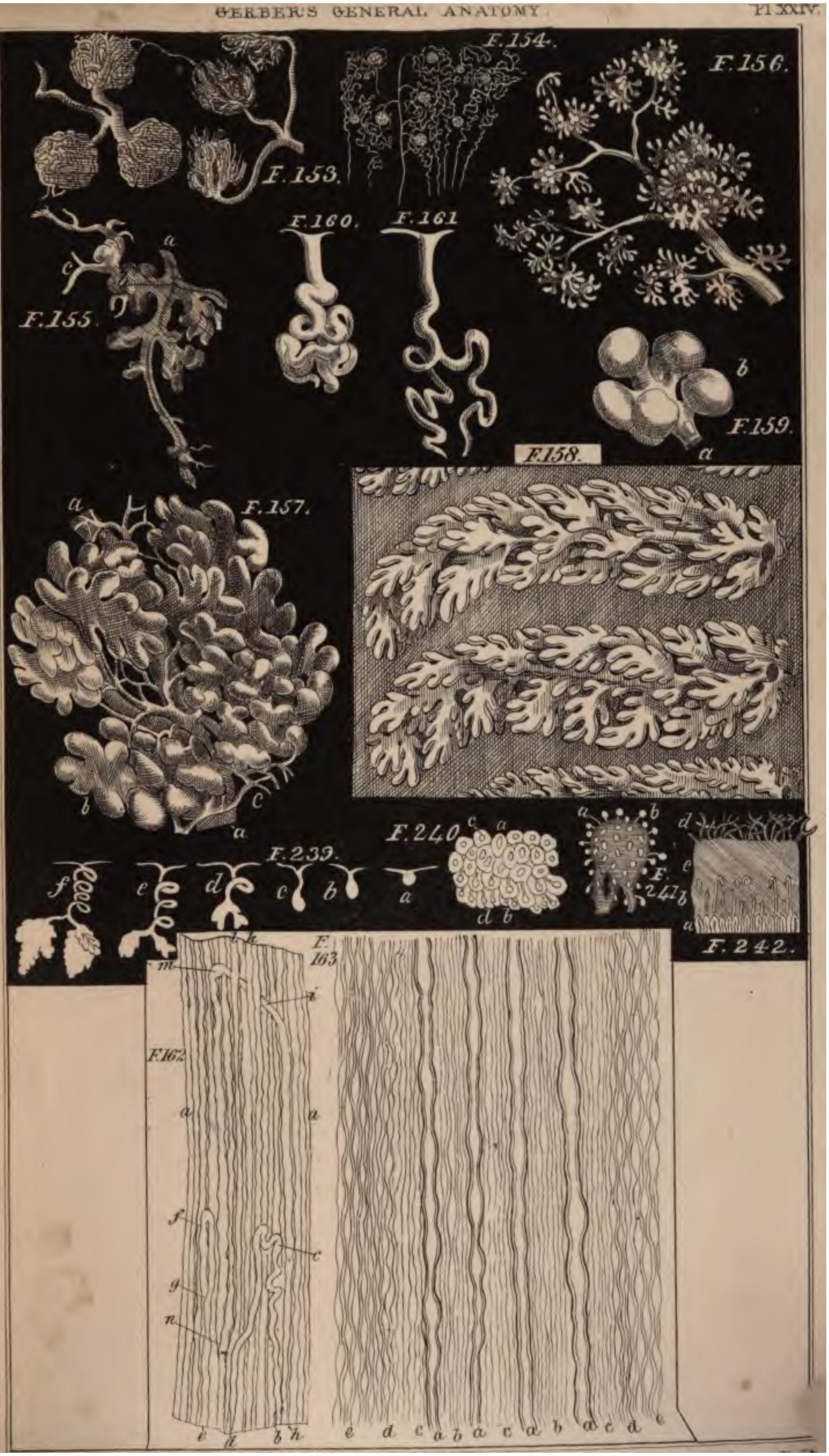
Fig. 4.

Fig. 5.

Fig. 9.

BICHAT'S GENERAL ANATOMY




F.153.
F.154.
F.156.
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F.157.
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GERBER'S GENERAL ANATOMY.

Pl. XXV.

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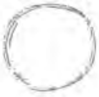
F. 164.



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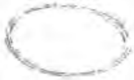

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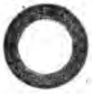

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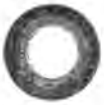

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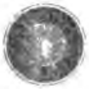

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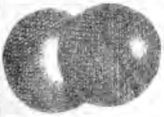
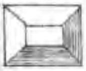


B

F. 170.



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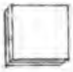

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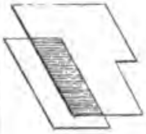

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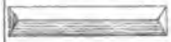

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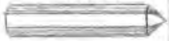

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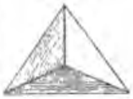
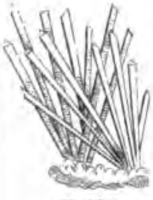
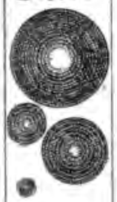




F. 176.

C

F. 177.



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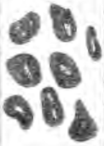

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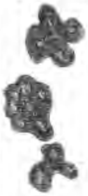

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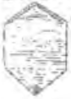
F. 180.



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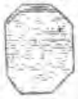

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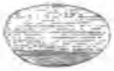

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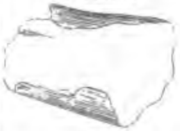

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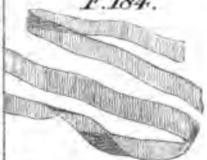
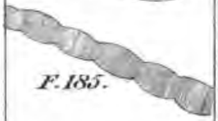
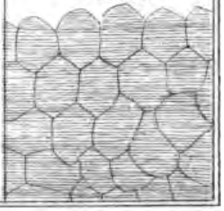




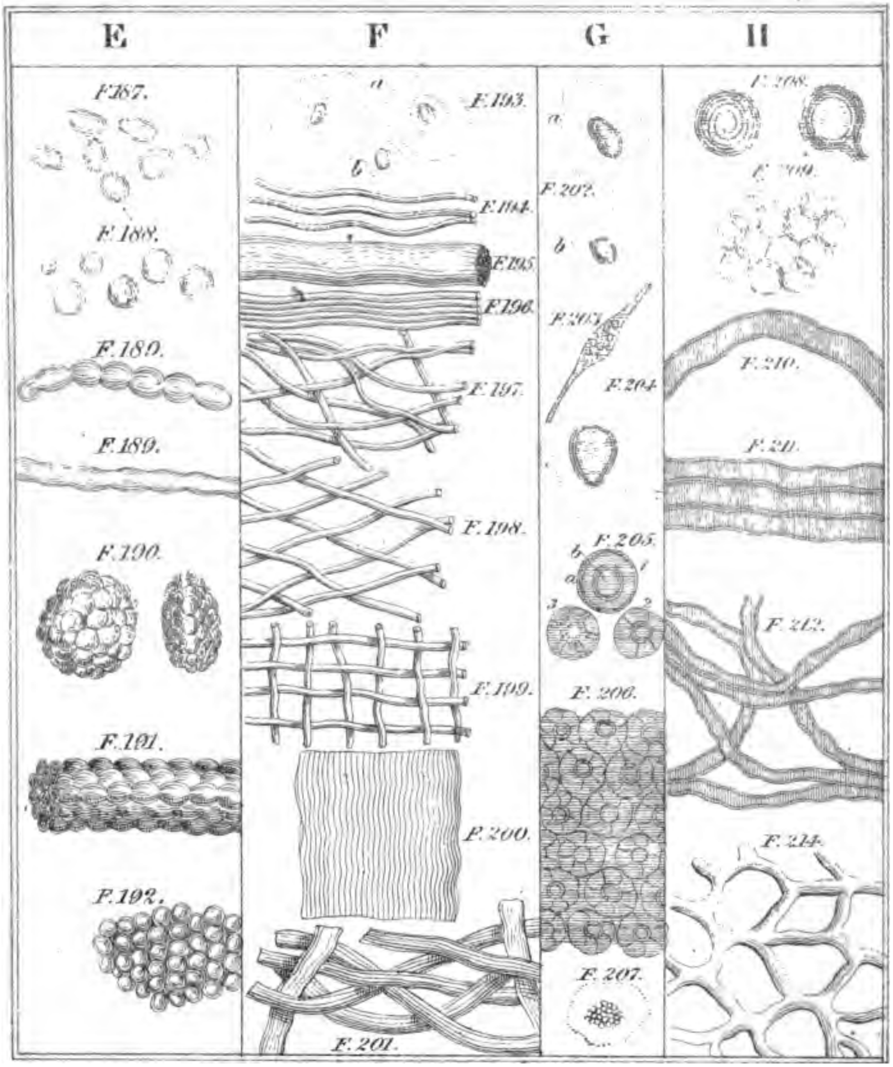
F. 185.

F. 186.



Madeley lith. 3 Wellington St. Strand.

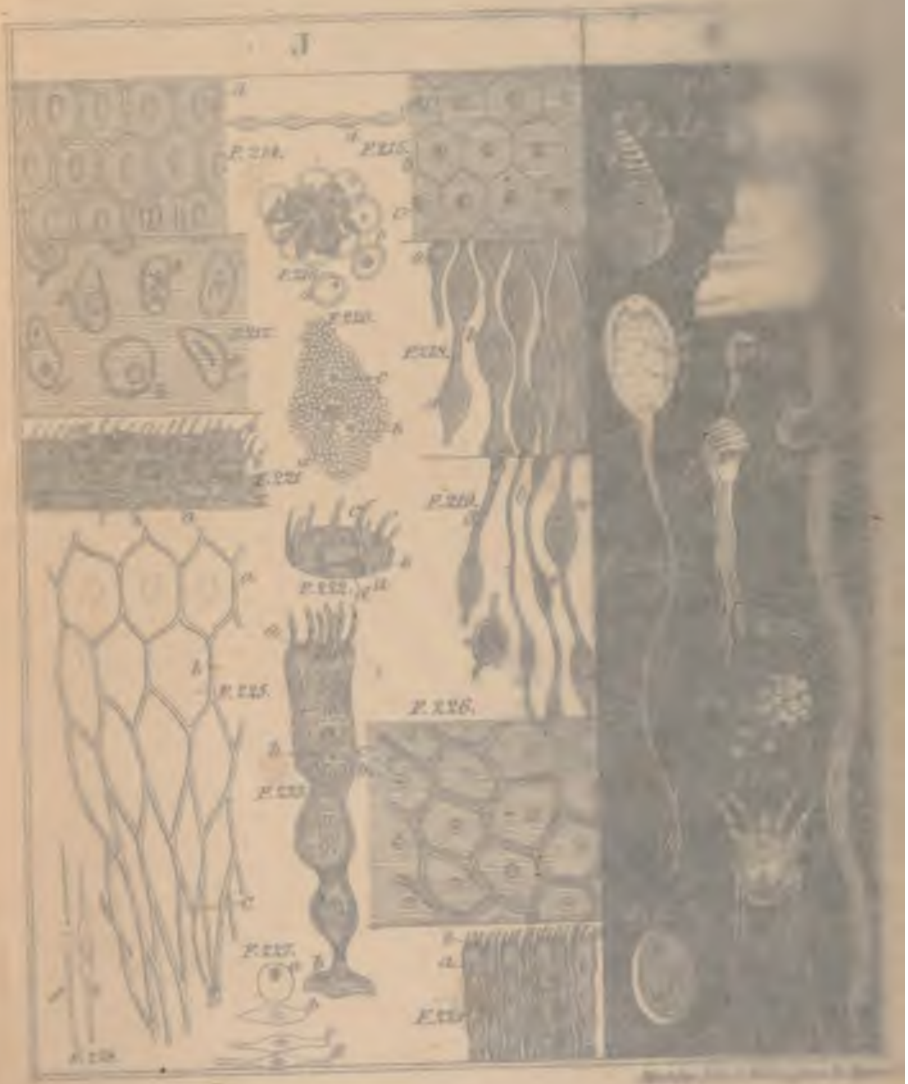
Published by H. Bailliere. 219, Regent St. 1841.



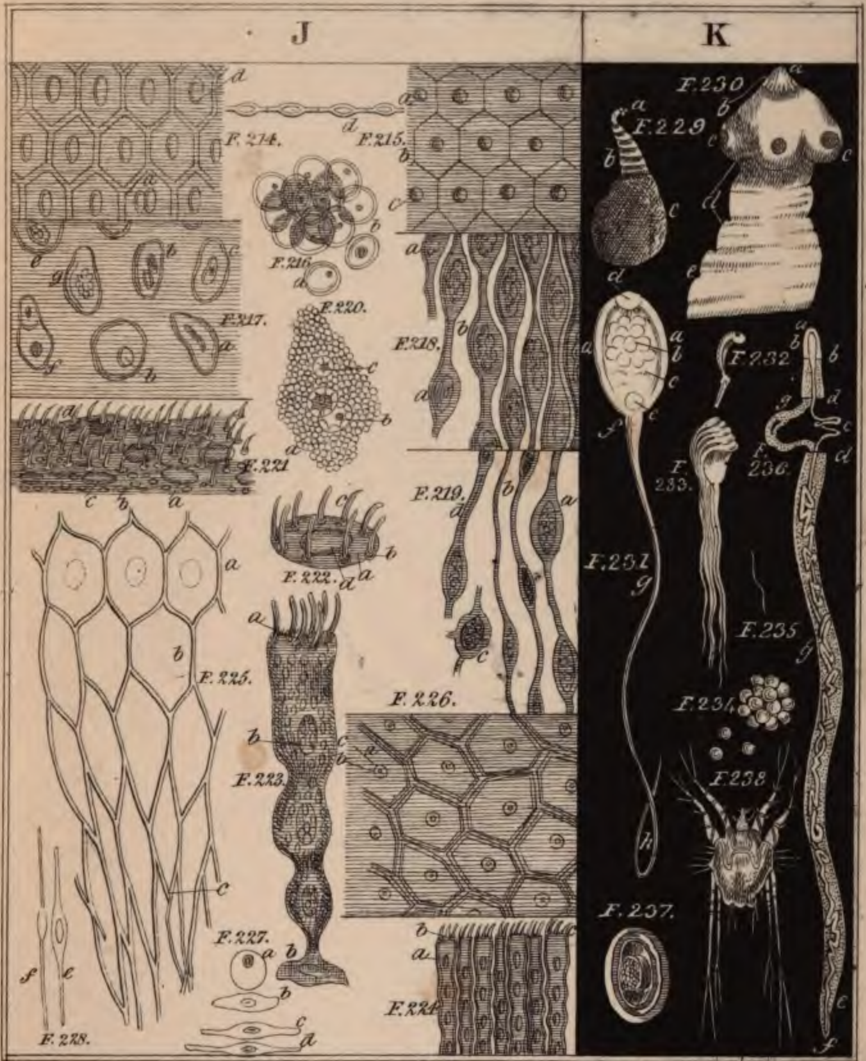
Madeley, Lith. 3, Wellington St. Strand

Published by H. Bailliere, 219, Regent St. 1841.

GERBER'S GENERAL ANATOMY



Published by H. Baillière, 219 Regent St. 1842

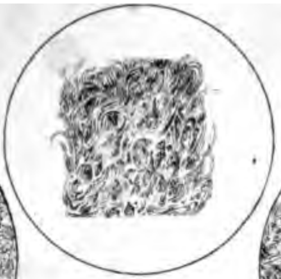


Madeley, lith. 3, Wellington St. Strand.

Published by H. Baillière, 219, Regent St, 1841.

Mr. GULLIVER'S FIGURES. Pl. XXVIII.

F 244.



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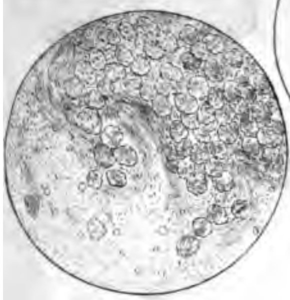

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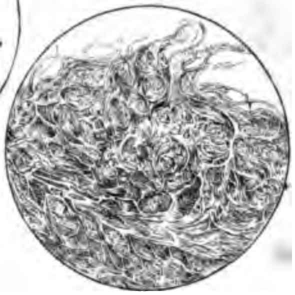

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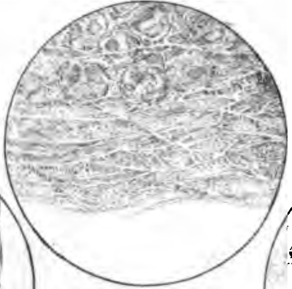

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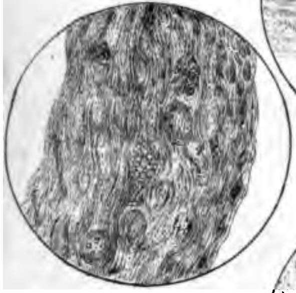

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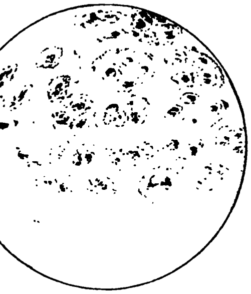

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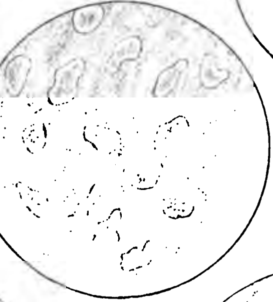

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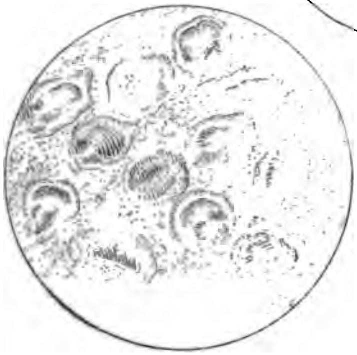

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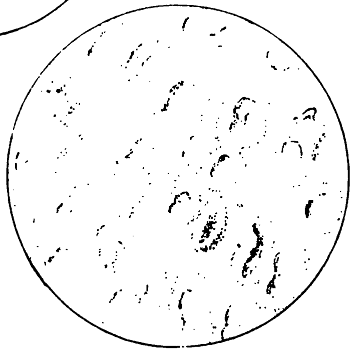

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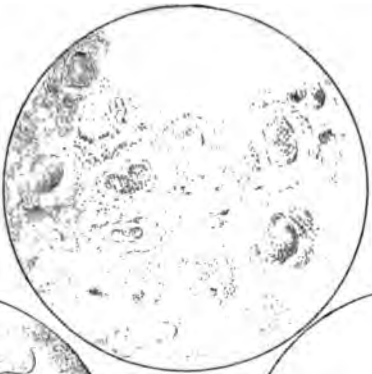
Mr. GULLIVER'S FIGURES.

F. 262.



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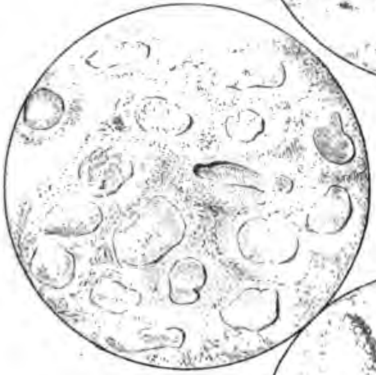
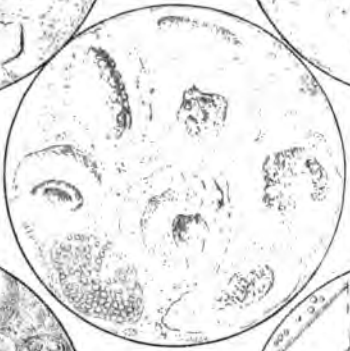


F. 254.

F. 255.



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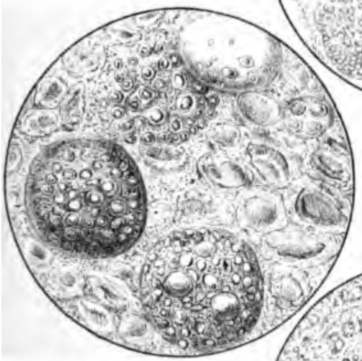

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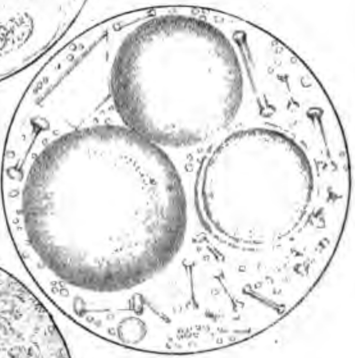

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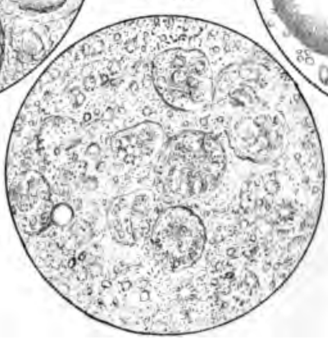
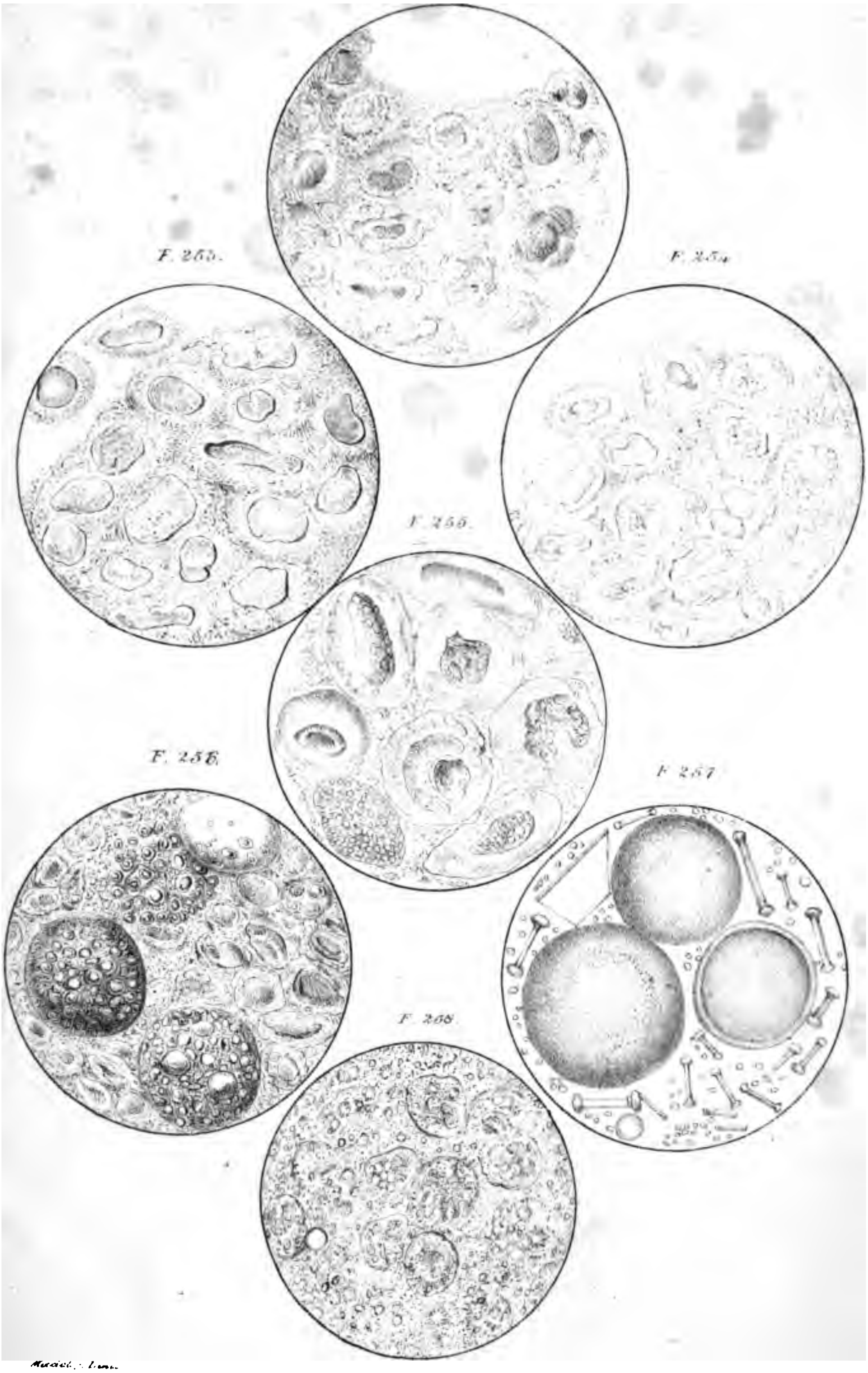


Maclise Lon.

J. Siddall.

Published by H. Bailliere, 219, Regent Street, 1841.

Mr. GULLIVER'S FIGURES. **Pl. XXIX.**



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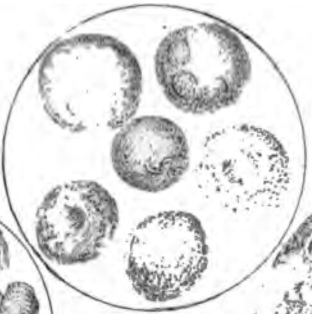
J. Siddall, del.

Published by H. Bailliere, 219, Regent Street, 1841.

Mr GULLIVER'S FIGURES.

F. 260.



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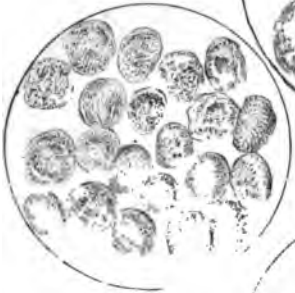

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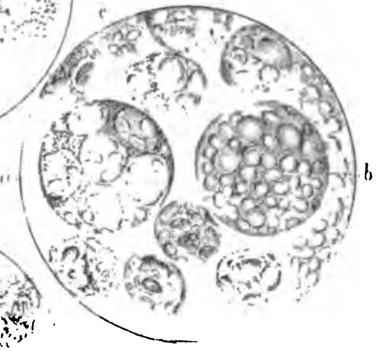

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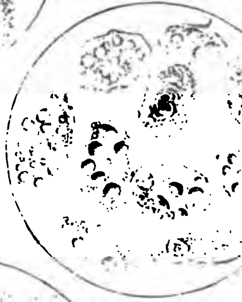

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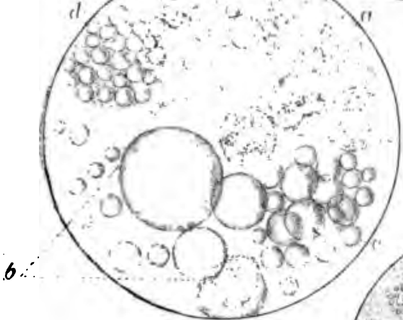

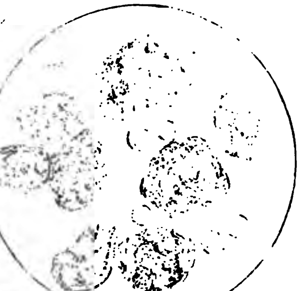

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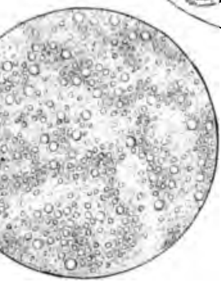

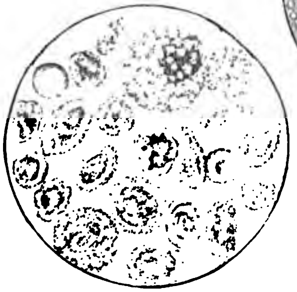

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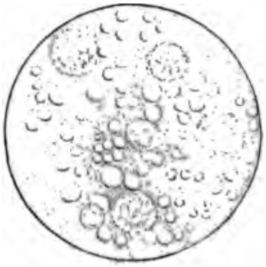

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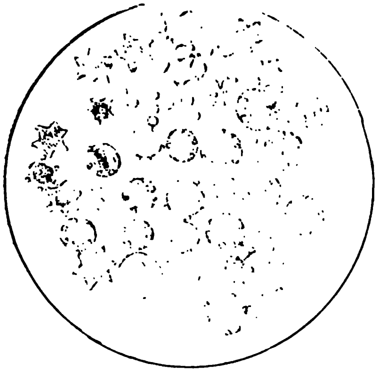
Mr GULLIVER'S FIGURES. Pl. XX

F. 268.



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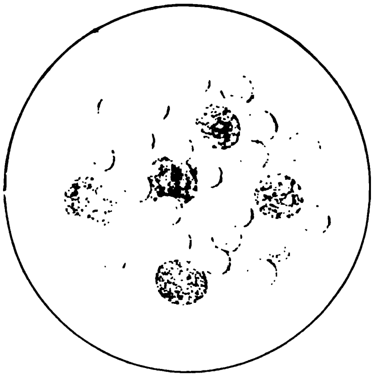

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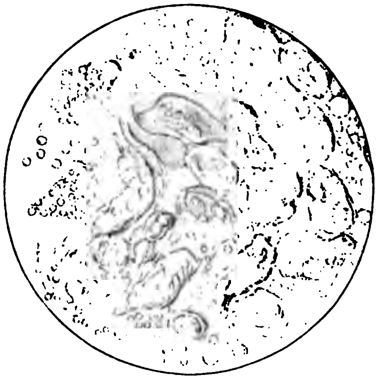

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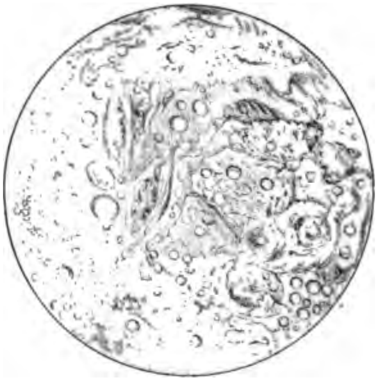

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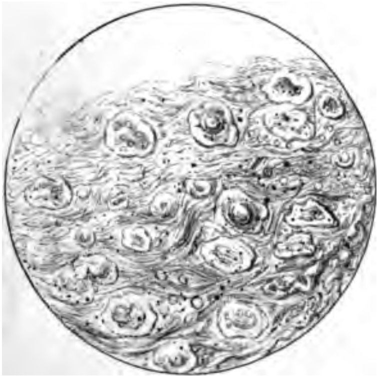

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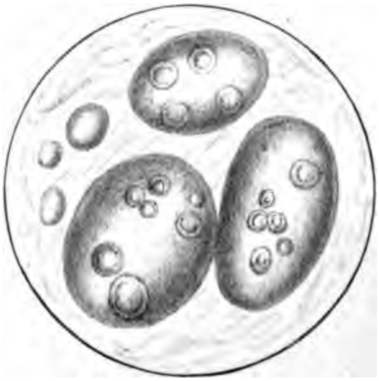

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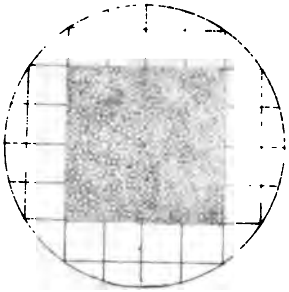
Mr GULLIVER'S FIGURES Pl. XXXII.

F. 274.



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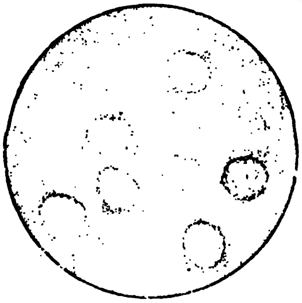

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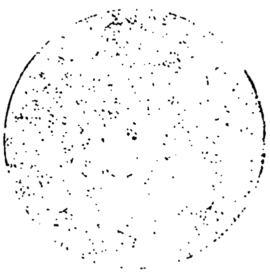

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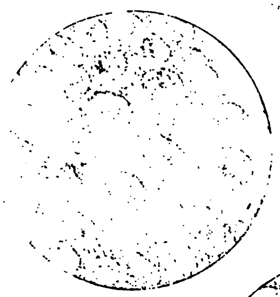

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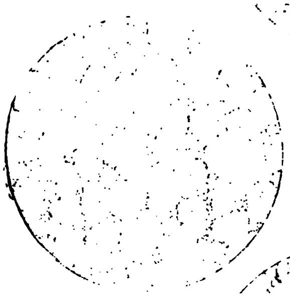

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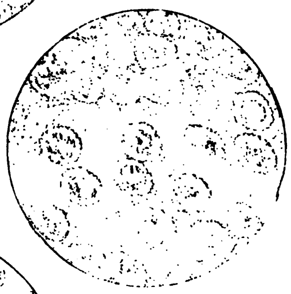

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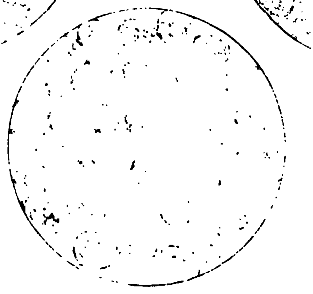

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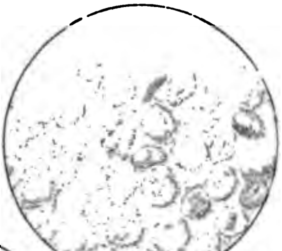
F. 281.



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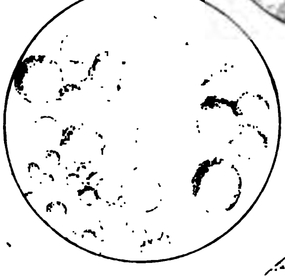

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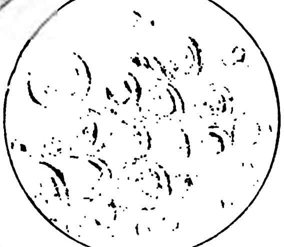

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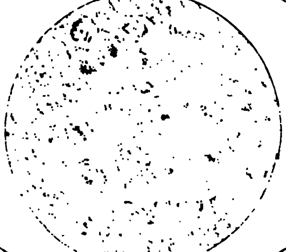

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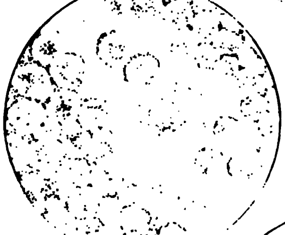

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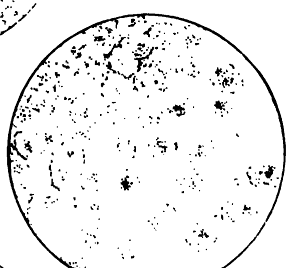

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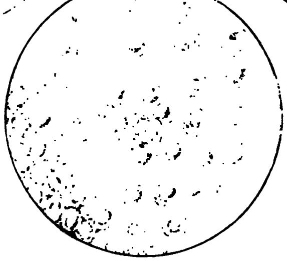

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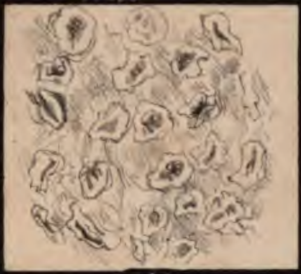
MR. GULLIVER'S FIGURES.

Pl, XXXIV.

F. 288



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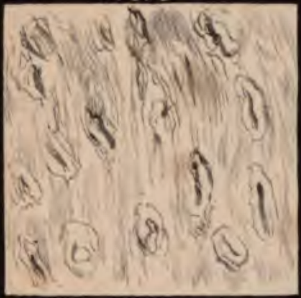

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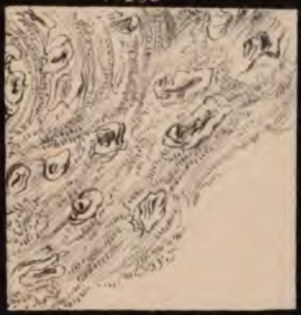

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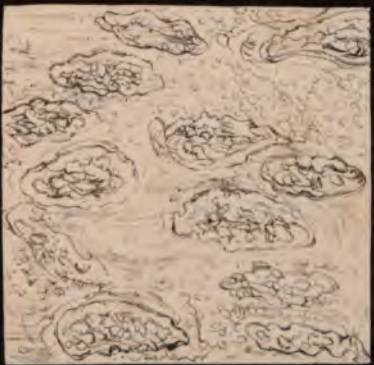

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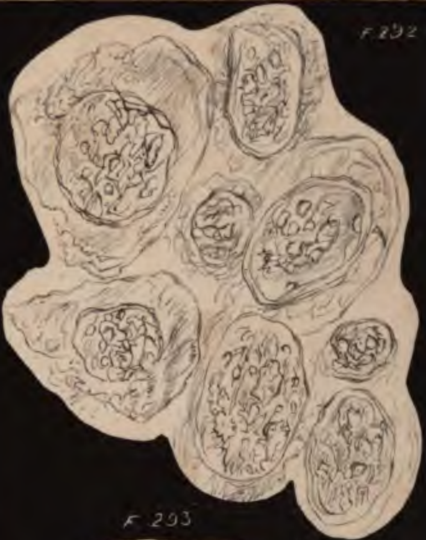

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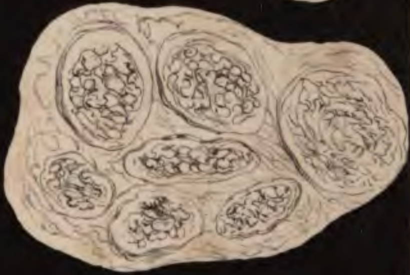

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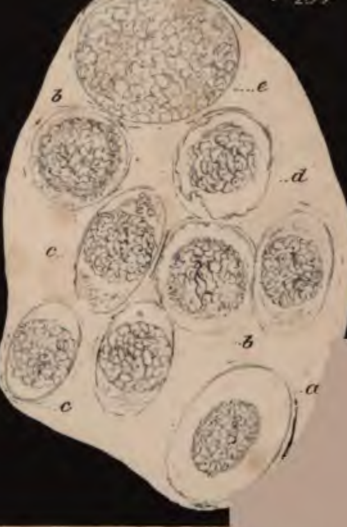

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